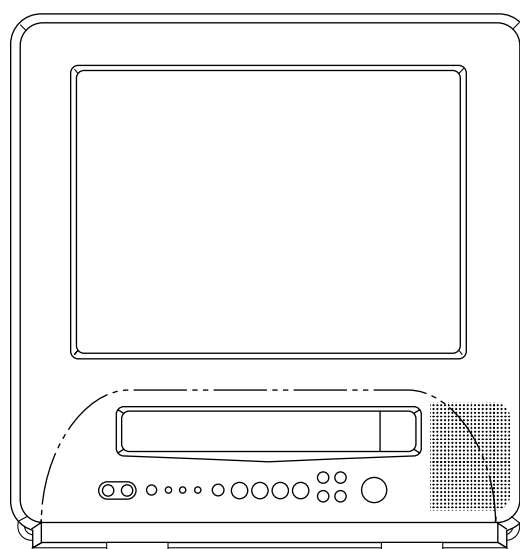


Service Manual

TV/VCR IN ONE BOARD

CHASSIS : CN-140
NTSC-M SYSTEM

MODEL : DVN-14F6N
DVN-20F6N



✓ Caution

: In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center (<http://svc.dwe.co.kr>).

DAEWOO ELECTRONICS CO., LTD.

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SPECIFICATIONS

Format	: VHS standard
Playback System	: 2 rotary heads, helical scanning system Luminance : FM azimuth recording Color Signal : Converted sub-carrier phase shift recording
Video Signal System	: NTSE-type color signal'
Audio Track	: 1 track
Tape Width	: 12.65 mm (1/2 inch)
Tape Speed	: (SP) : 33.35 mm/s (1.5/16 ips) (LP) : 16.67mm/s (21/32 ips) (SLP) : 11.12 mm/s (7/16 ips)
Maximum Recording Time	: (SLP) : 480min. with T-160 Videocassette
Power Source	: 120V AC, 60Hz
Power Consumption	: (14") : 60W (20") : 75W
Input Level	: Video : VIDEO IN jack(RCA) 1.0Vp-p, 75Ω unbalanced Audio : AUDIO IN jack (RCA) -3.8dBm. over 100K OHM unbalanced TV Tuner : VHF input CH2-CH13 Cable channels "A" - "W" 75Ω unbalanced UHF input CH14-CH 69

Video Horizontal Resolution	: More than 220 lines
Audio Frequency	: SP : 100 Hz-10KHz LP : 100Hz-7KHz SLP : 100Hz-5KHz
Signal-to-Noise Ratio	: Video : better than 43 dB (SP) Audio : better than 36 dB (with TV)
Operating Temperature	: 5°C-40°C
Weight	: (14") : 17Kg/(20") : 25Kg
Dimensions	: (14") : 379x402x369 (20") : 498x495x464
Provided Accessories	: Remote control unit
Picture Tube	: (20"/14") A48JLL40x02 A34JLL40x01
Sound Output Power	: Above 1.2W non distortion/ SPEAKER

* Design and apifications are subject to change without notice. our legal obligations.

• Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

2. dielectric strength test.

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) See table below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. see table below.

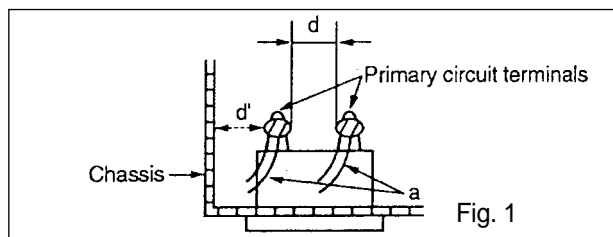


Table 1 : Rating for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance (d), (d')
100V	Japan	$\geq 1\text{M}\Omega/500\text{ V DC}$	1kV 1 minute	$\geq 3\text{ mm}$
110 to 130V	USA & Canada	---	900V 1 minute	$\geq 3.2\text{mm}$
* 100 to 250V	South America	$\geq 10\text{ M}\Omega/500\text{ V DC}$	4 kV 1 minute	$\geq 6\text{mm}(d)$ $\geq 8\text{mm}(d')$ (z:Power cord)

Note : This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

4. Leakage current test

confirm specified or lower leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.)

Measuring Method : (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z.

See figure and following table.

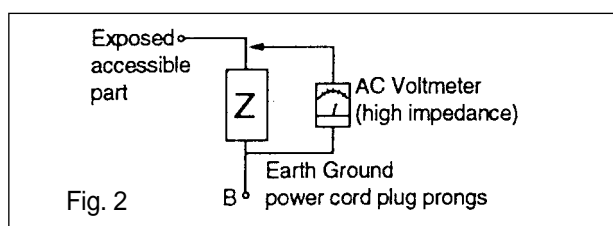


Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to :
100V	Japan		$i \leq 1\text{mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada		$i \leq 0.5\text{ mA rms}$	Exposed accessible parts
100 to 130 V	South America		$i \leq 0.7\text{ mA peak}$ $i \leq 2\text{mA dc}$	Antenna earth terminals
200 to 250 V			$i \leq 0.7\text{ mA peak}$ $i \leq 2\text{mA dc}$	Other terminals

Note : This table unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

IMPORTANT SERVICE NOTES

1. X-RAY RADIATION PRECAUTION

- 1) Excessive high voltage can produce potentially hazardous X-RAY RADIATION to avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 24.4kv (27.5kv) at zero beam current (minimum brightness) under a 120V AC power source. The high voltage must not, under any circumstance, exceed 27kv (28.5kv). Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure on page 4 of this manual. It is recommended as parts of the service record. It is important to use an accurate and reliable high voltage meter.
- 2) This receiver is equipped with X-RADIATION PROTECTION circuit which prevents the receiver from producing an excessively high voltage even if the B+ voltage increases abnormally. Each time the receiver is serviced, X-RADIATION PROTECTION circuit must be checked to determine that the circuit is properly functioning, following the X-RADIATION PROTECTION CIRCUIT CHECK procedure on page 4 of this manual.
- 3) The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION PROTECTION, the replacement tube must be exactly the same type tube as specified in the parts list.
- 4) Some parts in the receiver have special safety-related characteristics for X-RAY RADIATION PROTECTION. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

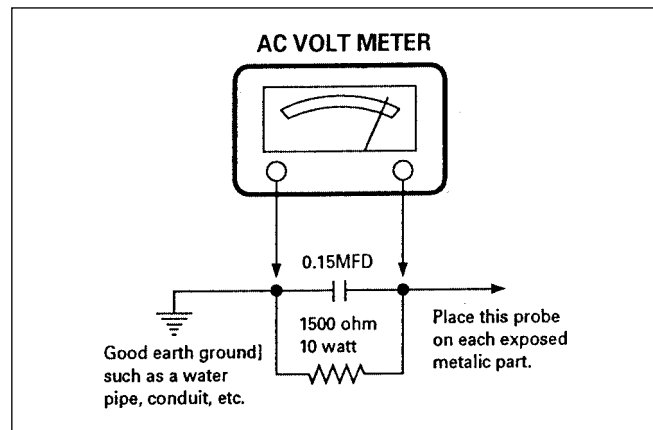
2. SAFETY PRECAUTION

WARNING : Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver. The following are the necessary precautions to be observed before servicing.

- 1) Since the chassis of this receiver has hazardous potential to ground whenever the receiver is plugged in (floating chassis), an isolation transformer must be used during service to avoid shock hazard.
- 2) Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter-proof goggles and keep picture tube away from the body while handling.
- 3) When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
- 4) Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screw-heads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. (Plug the AC line cord directly into a 120V AC outlet do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more

sensitivity in the following manner.

Connect at 1500 ohm watt resistor, paralleled by a 0.15 mfd, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and 0.15 mfd capacitor. Reverse the AC plug at the AC output and repeat AC voltage measurements for each exposed metallic part. Voltage measurements must not exceed 0.3 volts RMS. This corresponds to 0.2 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



3. PRODUCT SAFETY NOTICE

many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by shading on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-ray radiation or other hazards.

4. SERVICE NOTES

- 1) When replacing parts or circuit boards, clamp the lead wires to terminals before soldering.
- 2) When replacing a high wattage resistor (metal oxide film resistor) in the circuit board, keep the resistor min 1/2 inch away from circuit board.
- 3) Keep wires away from high voltage or high temperature components.

GENERAL ADJUSTMENT

1. GENERAL

In the majority of cases, color television will need only slight touch-up adjustment upon installation. Check the basic characteristics such as height, focus and sub-bright. Observe the picture for good black and white details without objectionable color shading. If color shading is evident, demagnetize the receiver. If color shading still persists, perform purity and convergence adjustments. This should be all that is necessary to achieve optimum receive performance.

2. VERTICAL HEIGHT ADJUSTMENT

- 1) Tune in an active channel.
- 2) Adjust brightness and contrast control for a good picture.
- 3) Adjust vertical height control (R304) for approximately one half inch over scan at top and bottom of picture screen.

3. FOCUS ADJUSTMENT

- 1) Tune in an active channel.
- 2) Adjust brightness, sharpness and contrast controls for a good picture, sharp scanning lines and/or sharp picture.

4. RF AGC ADJUSTMENT

- 1) Tune in an active channel.
- 2) Using the attenuator, apply the signal of 60dB μ V to the Antenna input terminal
- 3) Turn RF AGC control (R106) so that it is 1.0V \pm 0.3V lower than maximum voltage.

5. HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked verify that the receiver is operating within safe and efficient design limitations as specified :

- 1) Operate Receiver for at least 15 minutes at 100-140V AC line.
- 2) Set brightness, sharpness, contrast and color controls to minimum position (Zero beam).
- 3) Connect an accurate high voltage meter to CRT anode. The reading should be as follows.

DVN-14F6N	24KV~26KV
DVN-20F6N	26KV~28KV

If a correct reading cannot be obtained, check circuitry for malfunctioning components.

6. X-RADIATION PROTECTION CIRCUIT TEST

When service has been performed on the horizontal deflection system, high voltage system or B+ system, the X-RADIATION PROTECTION circuit must be tested for proper operation as follows:

- 1) Operate receiver for at least 15 minutes at 120V AC line.
- 2) Confirm high voltage protector when R409 of power PCB is connected to 30k Ω (1/4w) in parallel.
- 3) If high voltage protector is operated, remove 30k Ω (1/4w) and confirm whether high voltage protector is still on.
- 4) Confirm normal operation on sound and video when R410 is shorted.

7. WHITE BALANCE ADJUSTMENT

- 1) Receive MONOSCOPE PATTERN signal.
- 2) Set the each BIAS VR (VR903, VR904, VR905) and DRIVE VR (VR901, VR902) to center position and Minimize SCREEN using SCREEN VR on the side of FBT.
- 3) Open LEVER SW (S901) of CRT PCB.
- 4) Make straight and horizontal line by pushing service key (V/H) on the SERVICE remote.
- 5) Turn the SCREEN VR slowly until first color is brightened and turn the concerned BIAS VR to the anticlockwise until that line's color is disappeared.
- 6) Turn the SCREEN VR slowly again until another color is brightened and turn the concerned BIAS VR to the anticlockwise until that line's color is disappeared.
- 7) Turn the SCREEN VR slowly again until third color is brightened and turn the concerned BIAS VR to the anticlockwise until that line's color is disappeared.
- 8) Adjust the BIAS VR to become white concerned line by turning the BIAS VR in concerned with step 4-6, and 4-7 to clock direction (to be brightened).
- 9) Although you did step 4-5, 4-6, 4-7, If it is not bright each step's color but bright first color, stop turn the SCREEN VR at the position which color is hardly to be seen, and concerned BIAS VR to clock direction (to be brightened).
- 10) Turn LEVER SW (S901) of CRT PCB on.
- 11) Let the straight and horizontal line to be disappeared by pushing service key (V/H) on the SERVICE remote.
- 12) Set CONTRAST to maximize and set BRIGHT to become center, and adjust WHITE BALANCE using R's and B's DRIVE VR.
- 13) Inspect TRACKING of WHITE BALANCE by varying CONTRAST and BRIGHT.
If you need to inspect again, Repeat step 4-5 to 4-9.

NOTE :

1. When performing any adjustments to resistor controls and transformers use non-metallic screw driver or TV alignment tools.
2. Before performing adjustments TV set must be on at least 15 minutes.

8. CONVERGENCE MAGNET ASSEMBLY POSITIONING

Convergence magnet assembly and rubber wedges need mechanical positioning following the figure 2.

8-1. COLOR PURITY ADJUSTMENT

NOTE : Before attempting any purity adjustments, the receiver should be operated for at least 15 minutes.

- 1) Demagnetize the picture tube using a degaussing coil.
- 2) Vary the CONTRAST and BRIGHTNESS controls to maximum.
- 3) Adjust RED and BLUE Bias controls (RJ04 and RJ24) to provide only a green raster. Adjust the GREEN BIAS control (RJ13) if necessary.
- 4) Loosen the clamp screw holding the yoke, and slide the yoke backward to provide vertical green belt (zone) in the picture screen.
- 5) Remove the Rubber Wedges.
- 6) Rotate and spread the tabs of the purity magnet (see figure 2) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically.
- 7) Move the yoke slowly forward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
- 8) check the purity of the red and blue raster by adjusting the BIAS controls.
- 9) Obtain a white raster, referring "CRT GRAT SCALE ADJUSTMENT" on the CRT board.
- 10) Proceed with convergence adjustment.

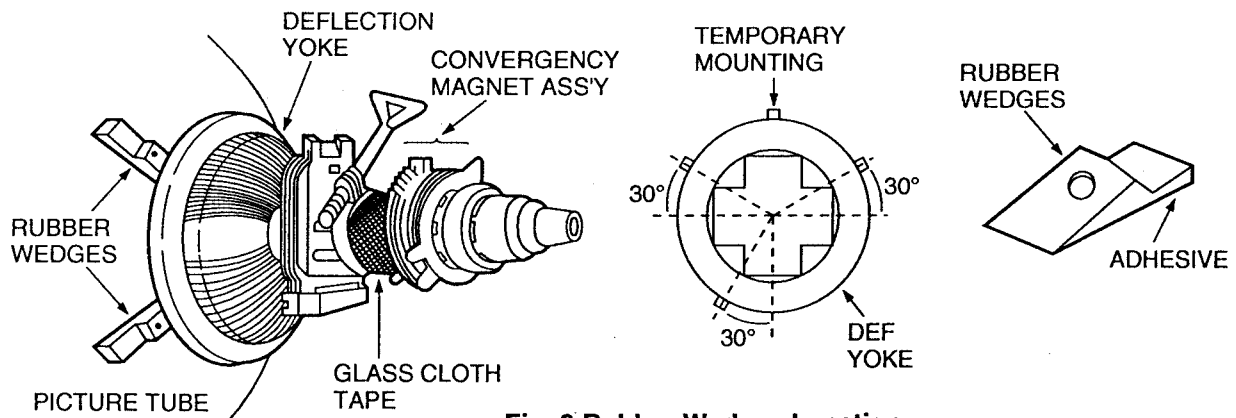


Fig. 2 Rubber Wedges Location

8-2. CONVERGENCE ADJUSTMENTS

NOTE : Before attempting any convergence adjustments, the receiver should be operated for at least 15 minutes.

A. CENTER CONVERGENCE ADJUSTMENT

- 1) Receive crosshatch pattern with a crosshatch signal generator.
- 2) Adjust the BRIGHTNESS and CONTRAST Controls for a good picture.
- 3) Adjust two tabs of the 4-Pole Magnets to change the angle between them (See Fig 3) and superimpose red and blue vertical lines in the center area of the picture screen. (See Fig. 4)
- 4) Turn both tabs at the same time keeping their angles constant to superimpose red and blue horizontal lines at the center of the screen. (See Fig. 4)
- 5) Adjust two tabs of 6-Pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
- 6) Repeat adjustments 3) 4) 5) keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets interact and make dot movement complex.

B. CIRCUMFERENCE CONVERGENCE ADJUSTMENT

NOTE : This adjustment requires Rubber Wedge Kit.

- 1) Loosen the clamping screw of deflection yoke to allow to yoke to tilt.
- 2) Place a wedge as shown on figure 2 temporarily. (Do not remove cover paper on adhesive part of the wedge).
- 3) Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See Fig. 4) Push the mounter wedge into the space between picture and the yoke to hols the yoke temporarily.
- 4) Place other wedge into bottom space and remove the cover paper to stick.
- 5) Tilt front of the yoke right or left to obtain better convergence in circumference. (See Fig. 4).
- 6) Hold the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to hold the yoke.
- 7) Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
- 8) After placing three wedges, recheck overall convergence. Tighten the screw furmly to hold the yoke tightly in place.
- 9) Stick 3 adhesive tapes on wedges as shown in figure 2.

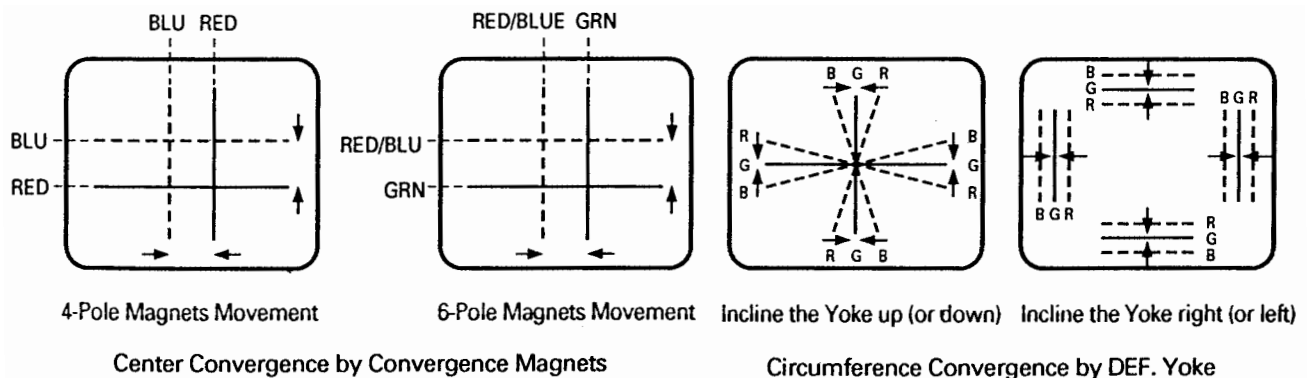
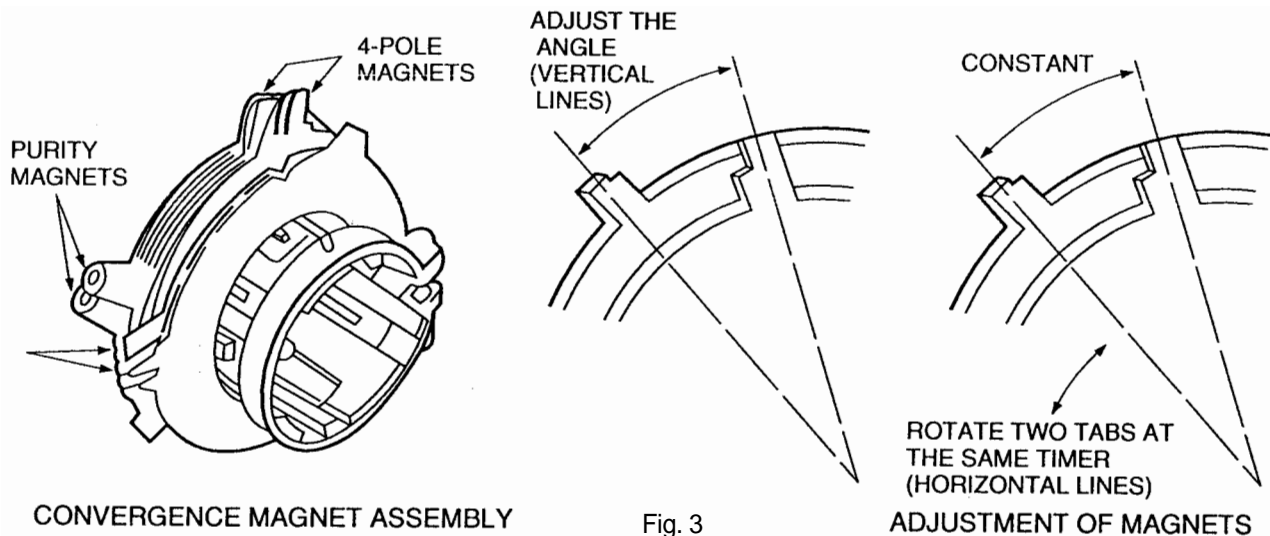


Fig. 4 Dot Movement Pattern

LEADLESS(CHIP) INSTRUCTION

1.LEADLESS(CHIP) COMPONENT REMOVAL INSTRUCTION

- The following procedures are recommended for the replacement of the leadless components used in this unit.

1-1. Preparation for replacement

- a. Soldering Iron
Use a pencil-type soldering iron that uses less than 30 watts.
- b. Solder
Eutectic solder (Tin 63%, Lead 37%) is recommended.
- c. Soldering time
Do not apply heat more than 4 seconds.
- d. Preheating
Leadless capacitor must be preheated before installation.
(130°C~150°C, for about two minutes).

Note :

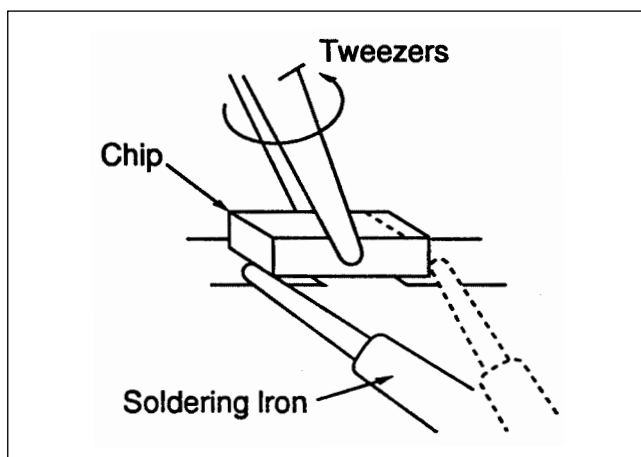
- a. Leadless component must not be reused after removal.
- b. Excessive mechanical stress and rubbing of the component electrode must be avoided.

1-2. Removing the leadless component (Resistors, Capacitors)

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove leadless component with a twisting motion.

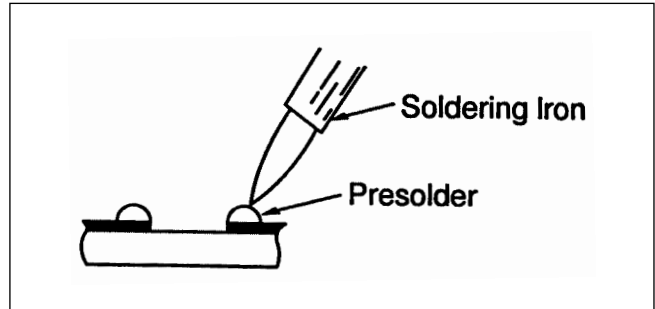
Note :

- a. Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.
- b. Take care not to break the copper foil on printed board.



1-3. Installing the Leadless (chip) Component

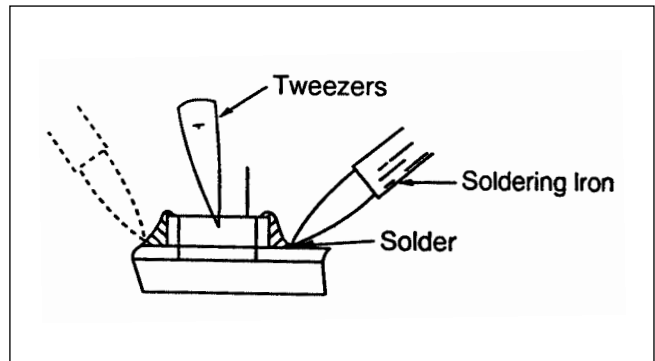
- 1) Presolder the contact points of the circuit board.



- 2) Press the part downward with tweezers and solder both electrodes as shown below.

Note :

Do not glue the replacement leadless component to the circuit board.



2.LEADLESS (CHIP) COMPONENT IDENTIFICATION

2-1. Check the followings before S. M. D Troubleshooting

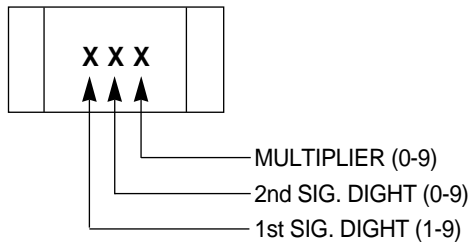
- Cracked Chipped component Body
- Cracked Separated Solder Joints
- Peeling end Terminations Fractured Leads

- Rejection of Solder from copper Pads or Component
- Foreign Matter on Copper Pads
- Sloder Bridges

2-2. S.M.D (Surface Mounted Devices) Identification

1) Chip Resistor Identification

* Standard chip Resistor code



Examples

1	2	3
---	---	---

 $= 12 \times 10^3 (1000) = 12000\Omega = 12K\Omega$

4	7	0
---	---	---

 $= 47 \times 10^0 (1) = 47\Omega$

2) Chip Capacitor Identification

There is no identification of chip capacitor

REMARK Leadless (CHIP) components are identified on schematic by means of "(C)" adjacent to symbol numbers.

CLEANING AND LUBRICATION OF DECK MECANISM IN DVN-14/20F6N

Cleaning and Lubrication

A. cleaning the Tape Transport System

The following parts should be cleaned after every 500 hours of use.

- TENSION POLE
- S-GUIDE POST
- FE HEAD
- S-SLANT POLE
- VIDEO HEAD/DRUM
- T-SLANT POLE
- T-GUIDE ROLLER
- AC HEAD/AE HEAD
- T-CUIDE POST
- CAPSTAN SHAFT
- PINCH ROLLER

NOTE : After cleaning with alcohol, allow the parts to dry thoroughly before using a cassette tape.

B. Cleaning the Drive System

The following parts should be cleaned after every 500 hours of use.

- REEL TABLE
- T MAIN BRAKE
- S MAIN BRAKE
- T MAIN BRAKE
- CAPSTAN FLYWHEEL/PULLEY
- REEL PULLEY

C. Lubrication points

The following parts should be cleaned and lubricated after every 500 hours of use. apply one (1) or two (2) drops of oil. Refer to the "Replacement Parts List" for the stock number of the recommended oil.

- S REEL TABLE POST
- T REEL TABLE POST
- IDLER PULLEY

MECHANICAL DISASSEMBLY(DECK)

1.TOP VIEW

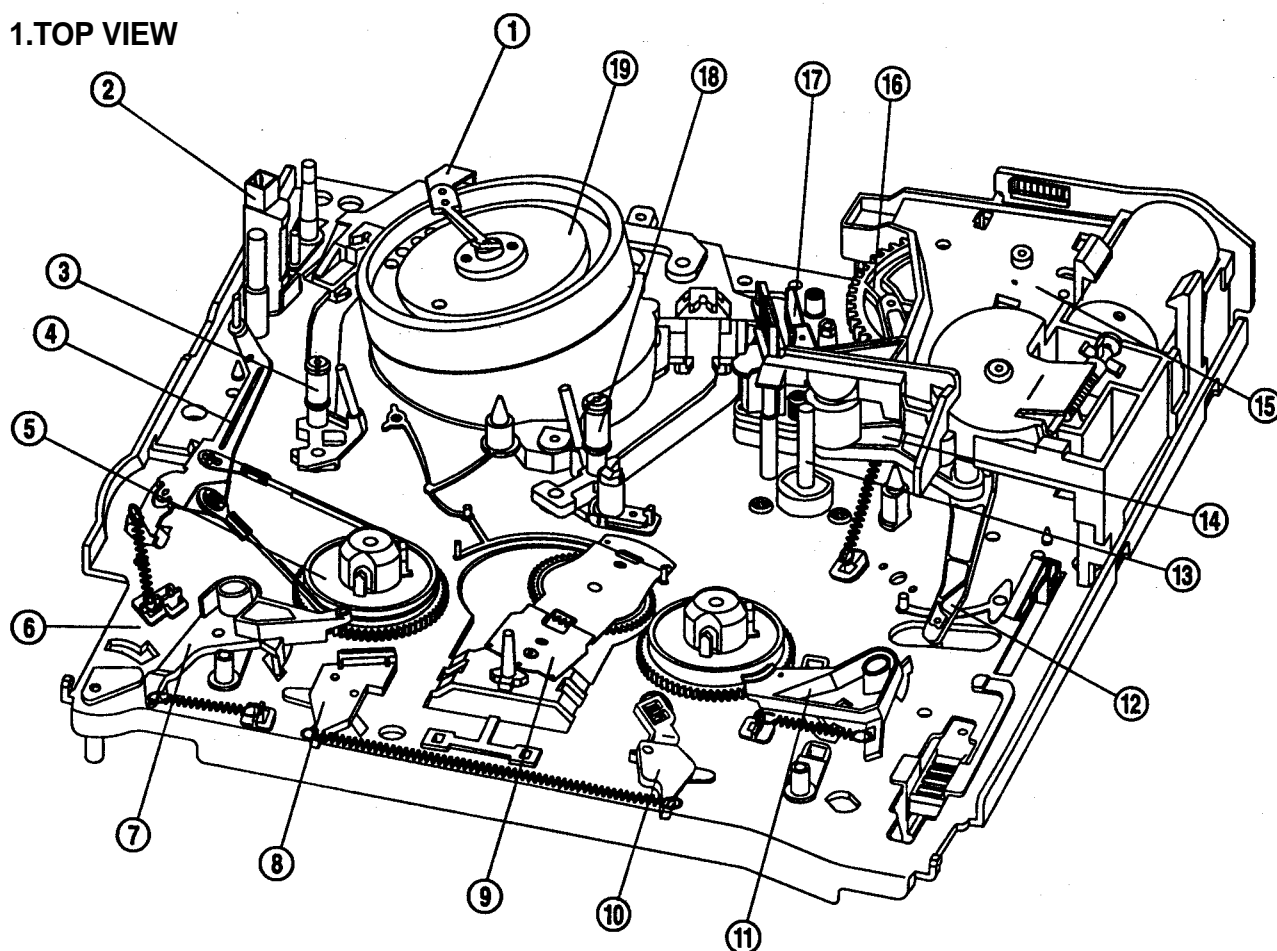


Fig. 9- tape Transport Mechanism Identification (Top View)

1. Earth Bracket Ass'y
2. FE Head
3. S-Slant Pole Ass'y
4. Tension Lever Ass'y
5. Reel Table
6. Main Base Ass'y
7. S-Sub Brake Ass'y
8. S-Main Brake Ass'y
9. Idler Plate Total Ass'y

10. T-Main Brake Ass'y
11. T-Sub Brake Ass'y
12. Relay Lever
13. Capstan Motor
14. Pinch Lever Total Ass'y
15. L/C Bracker Total Ass'y
16. Cam Gear
17. AC Head Total Ass'y
18. T-Slant Pole Ass'y

2.BOTTOM VIEW

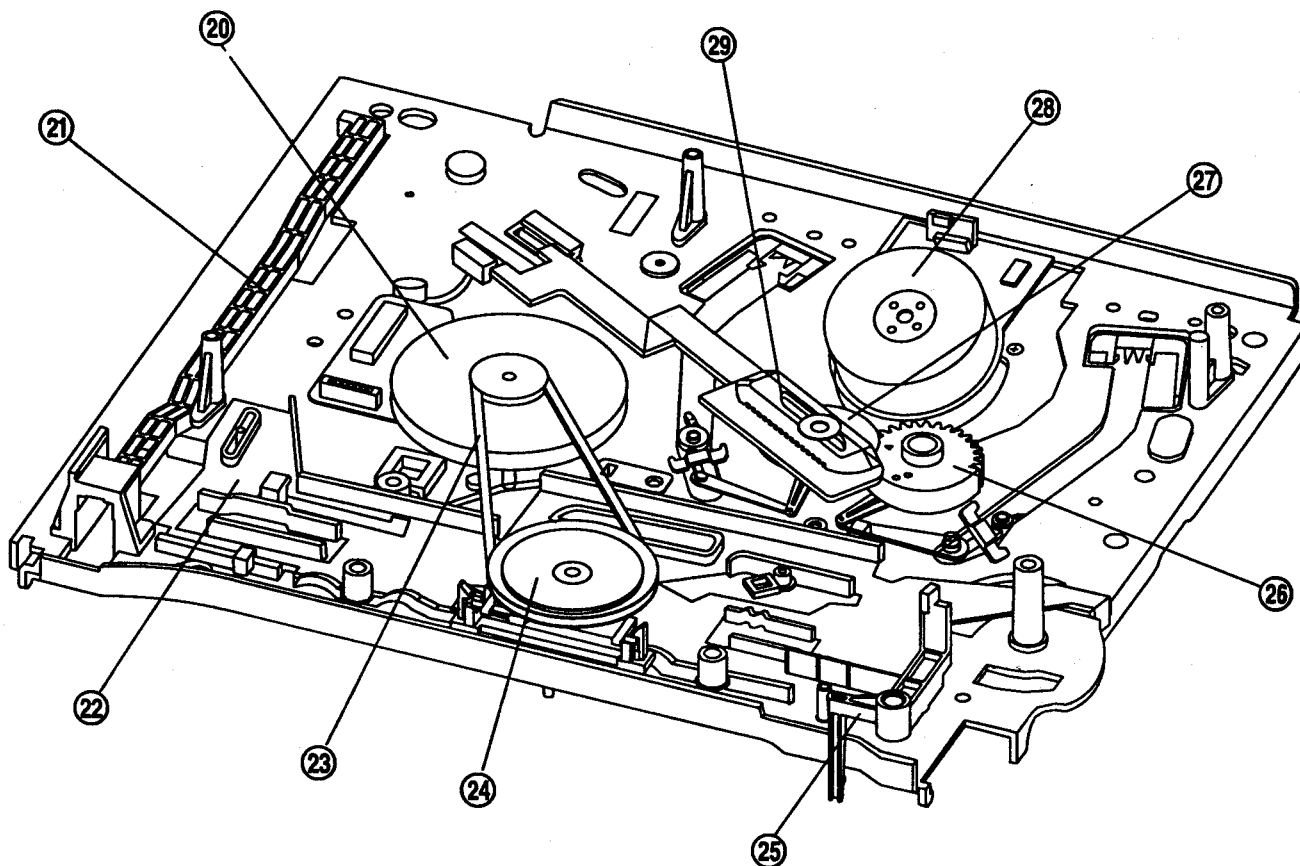


Fig. 10- Tape Transport Mechanism Identification (Bottom View)

- 20. Capstan Motor
- 21. F/L Rack
- 22. Connect Plate
- 23. Reel Belt
- 24. Reel Gear Total Ass'y

- 25. Record Safety Lever
- 26. Loading Lever L
- 27. Loading Lever R
- 28. Drum Total Ass'y
- 29. Loading Rack

3.F/L MECANISM VIEW

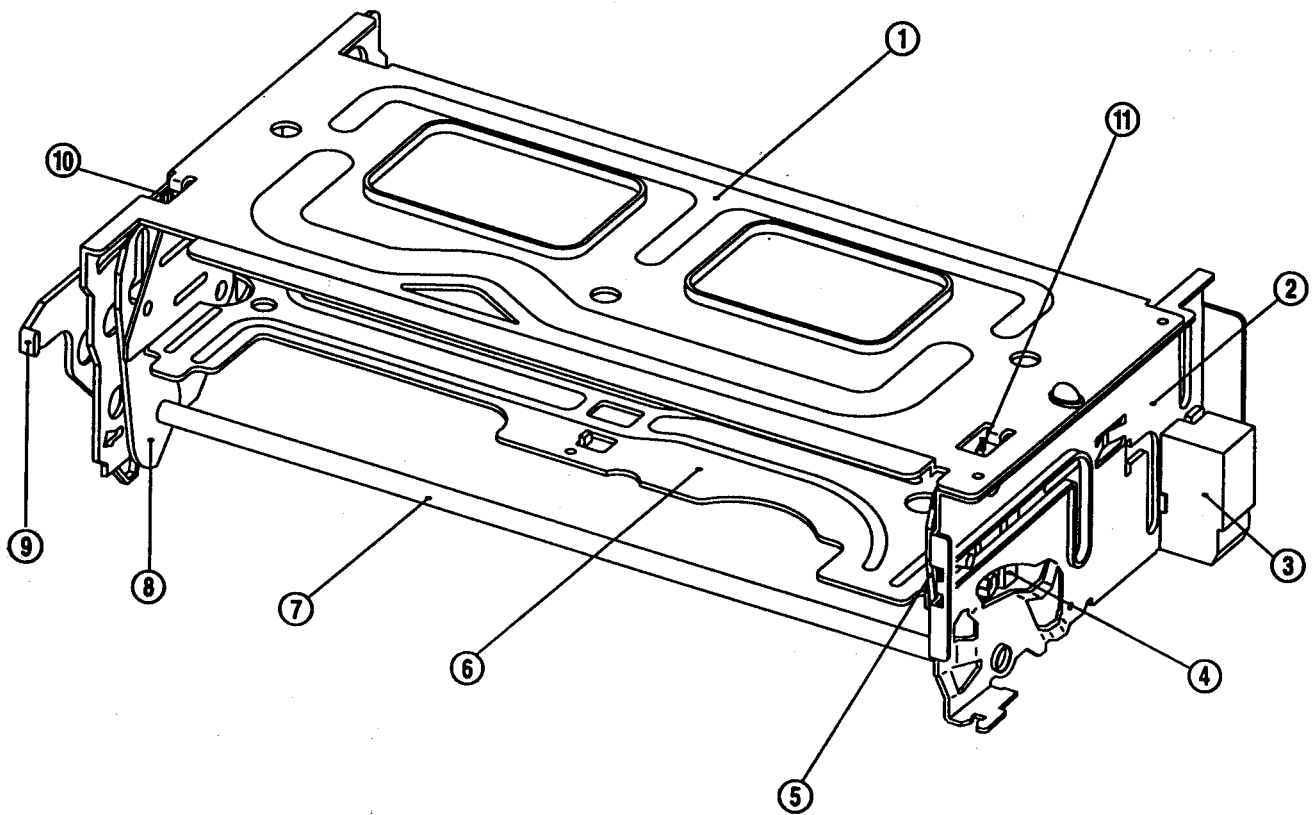


Fig. 11- Front Loading Mechanism Identification (Top view)

- | | |
|---------------------|--------------------|
| 1. Top Plate Ass'y | 7. Loading Shaft |
| 2. F/L Bracket R | 8. Loading Lever L |
| 3. Prism Cap | 9. Door opener |
| 4. Release Lever | 10. Safety Lever |
| 5. Loading Lever R | 11. Safety Lever R |
| 6. CST Holder Ass'y | |

4. General removal view

Front Loading Mechanism Removal (Fig. 12)

NOTE :

The front loading mechanism must be in the eject position to remove it.

1. Remove two (2) screw holding the Front Loading Mechanism.
2. Lift the rear of the cassette loading mechanism (hole

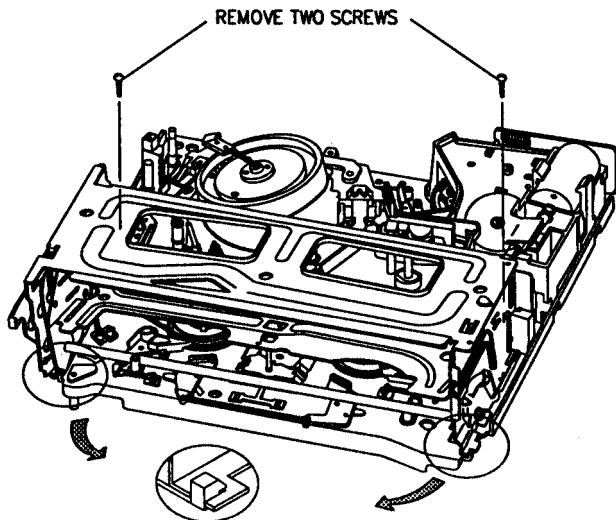


Fig. 12- Front Loading Mechanism Removal

parts for screw) to separate it from the Main Base.

Front Loading Mechanism disassembly (Fig. 13~17)

1. Remove the front loading mechanism.
2. Remove one(1) screw holding the F/L bracket R and move the F/L bracket R in the direction of arrow to separate it from the top plate and the cassette holder

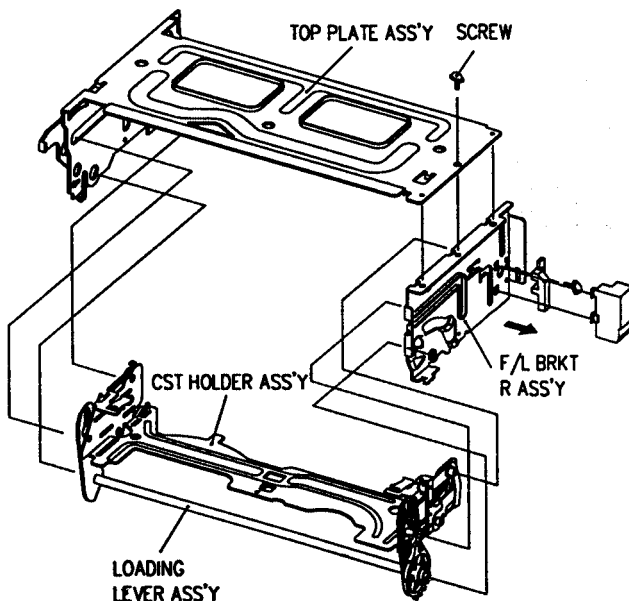


Fig. 13- front loading mechanism disassembly

- assembly.
3. Remove the cassette holder assembly (Fig. 13)
4. Remove the prism cap and remove one (1) screw hold-

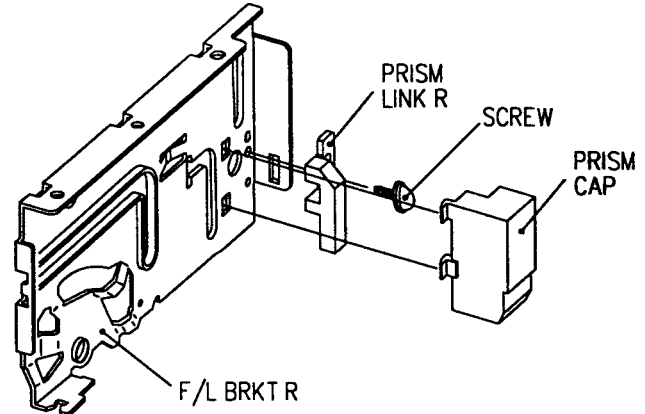


Fig. 14- F/L Brkt Disassembly

ing the prism link R and remove the prism link R from the F/L bracket R (Fig. 4)

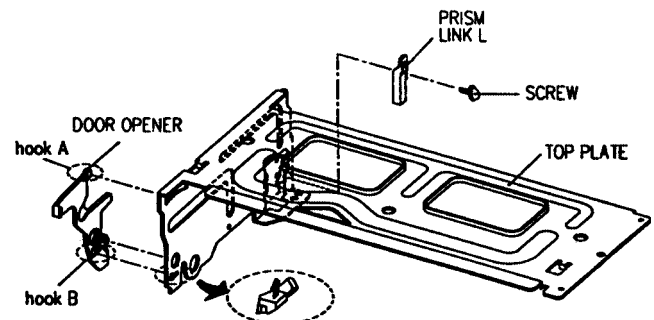


Fig. 15- Top Plate Disassembly

5. Remove one (1) screw holding the prism link L (Fig. 15).
6. Release hook B by pushing it in the direction of the arrow and remove the door opener (Fig. 15).
7. Press the linked section of the loading lever assembly in the direction of the arrow and remove the loading lever assembly (Fig. 16)
8. Remove the safety spring between the safety lever and the cassette holder (Fig. 16)
9. Remove the release spring between the release lever and the safety lever R (Fig. 16)

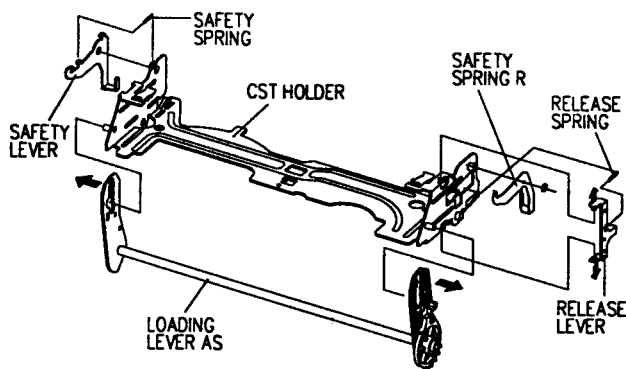


Fig. 16- Loading Lever Ass'y Disassembly

NOTE :

Reassemble the cassette loading mechanism using the reverse procedures. Confirm that the two (2) bosses on the left side of the cassette holder are inserted into the groove in the left side of the top plate. Insert the two (2) bosses on the right side into the F/L bracket R (Fig. 17)

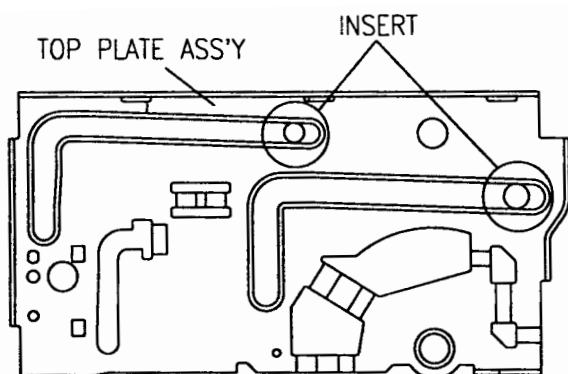


Fig. 17- F/L Brkt R

Replacement of the Drum Assembly/Earth Bracket (fig. 18)

1. Remove three (3) screw (3).
2. Remove the earth bracket (5).
3. Carefully lift drum assembly (4) from the deck mechanism taking care not to damage or touch the video heads.

NOTE :

After reassembling the assembly, confirm that the tape runs smoothly and confirm all tape path adjustment procedures in the "Mechanical Adjustment" section of this service publication.

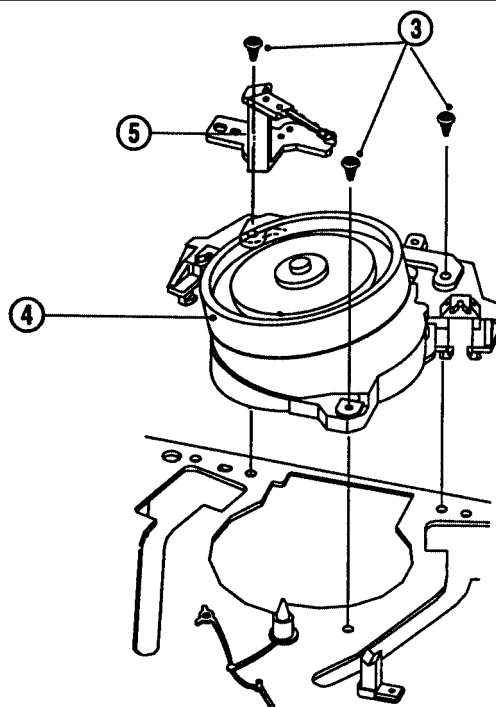


Fig. 18- Replacement of the Drum total Ass'y and Earth Brkt Ass'y

Reel belt, Loading Rack, Loading Gears, and S/T Slant Pole Removal (Fig. 19, 20)

1. Turn the Deck Mechanism upside down and remove the reel belt.
2. Remove one (1) poly washer and remove the loading rack (2).
3. Remove Right and left loading gears and .
4. Remove the S and T slant poles and by pulling them in the direction of the arrow.

NOTE :

- Take care not to get grease on the guide rollers.
- When reinstalling, realign the gears as shown in Fig 20.

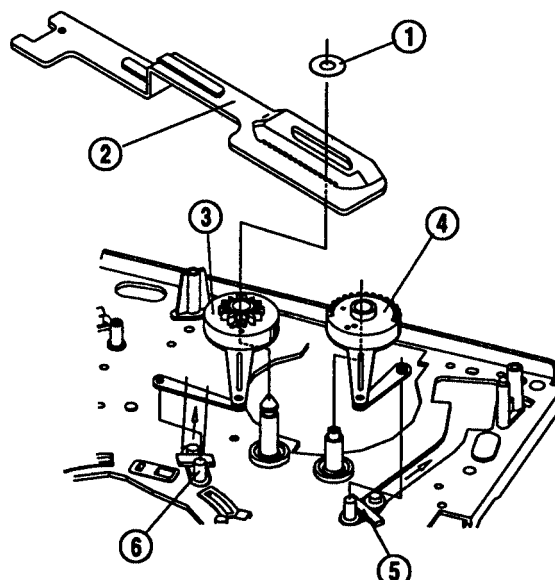


Fig. 19- Reel belt, Loading Rack, Loading Gears, S/T slant pole Removal

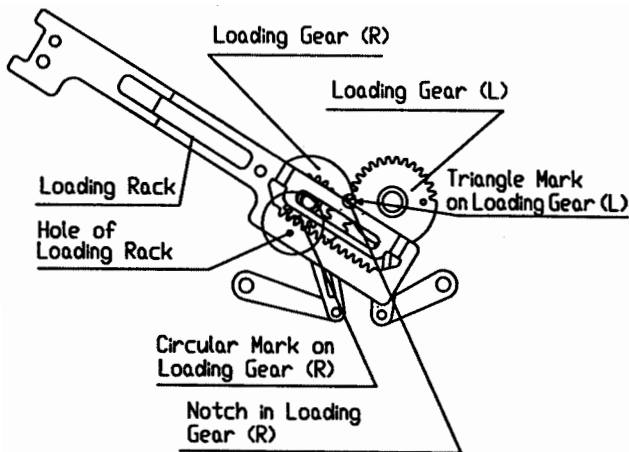


Fig. 20- Loading Gears/Loading Rack Alignment

A/C Head Assembly Removal (Fig. 21)

1. Remove one (1) nut hex from the A/C head assembly (Fig. 21)
2. Remove the A/C head assembly and remove the A/C head spring from the A/C head assembly

NOTE :

After reinstalling, perform all A/CHead adjustment procedures and all tape path alignment procedures in publication. Perform the "Audio Bias Level Adjustment" in the "Electrical Adjustment" section of this service manual.

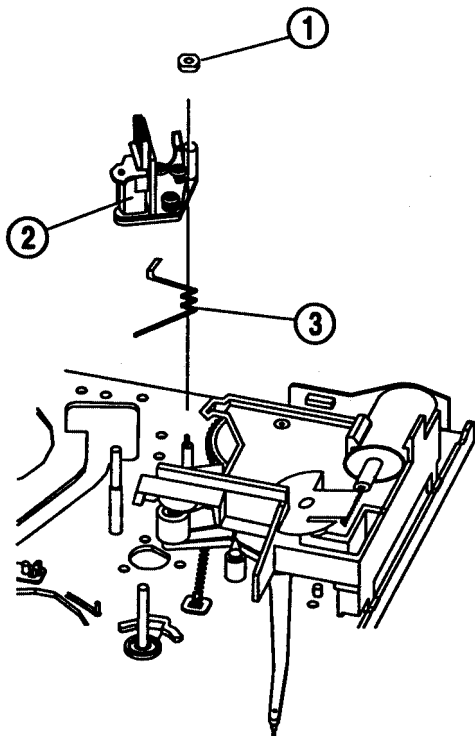


Fig. 21- A/C Head Assembly Removal

L/C Bracket Assembly removal (Fig. 22)

1. Remove one (1) screw from the L/C bracket assembly and remove the L/C bracket assembly from the deck mechanism (Fig. 22)

NOTE :

When reassembling, refer to Fig. 23 for alignment instructions.

Replacement of Pinch Lever Total Assembly Removal (Fig. 22)

1. Remove one (1) washer
2. Unhook the pinch spring from the main base and remove the pinch lever total assembly

NOTE :

Take care not to get oil on the outside surface of the pinch roller

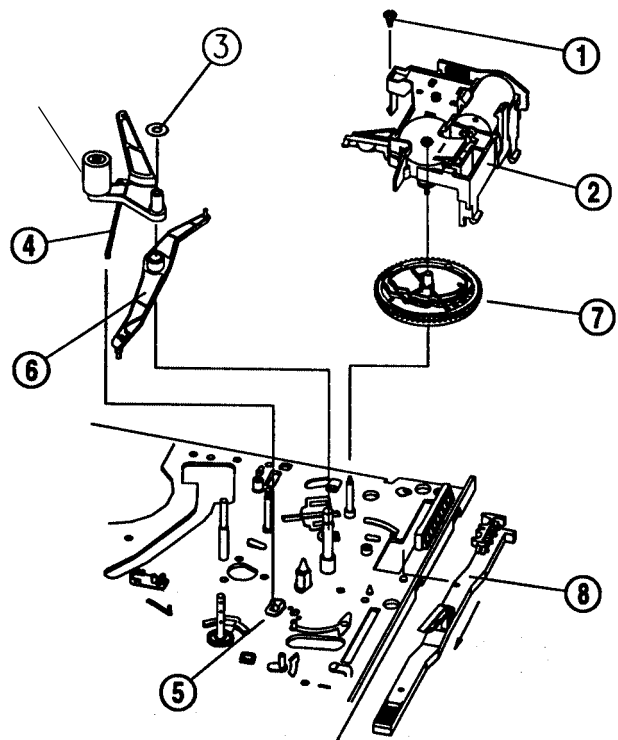


Fig. 22- Replacement of L/C Bracket Total Assembly/Pinch Lever Total Assembly/cam Gear/Relay Lever/F/L Rack

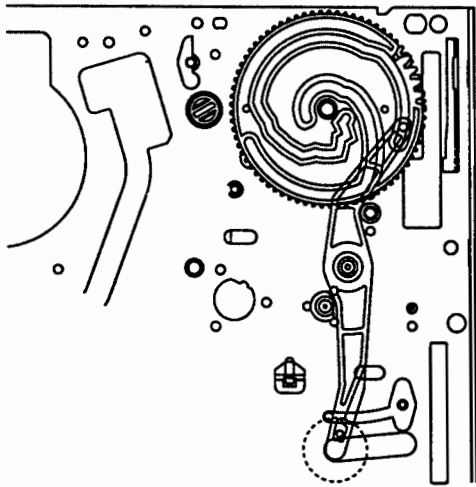


Fig. 23- L/C Bracket Assembly Alignment

Cam Gear, and F/L Rack Removal (fig. 22)

1. Remove the cam gear from the deck mechanism.
2. Remove the relay lever from the main base.
3. Remove the F/L rack from the deck mechanism.

NOTE :

When reassembling, align the assembly as shown in Fig. 23 & 24.

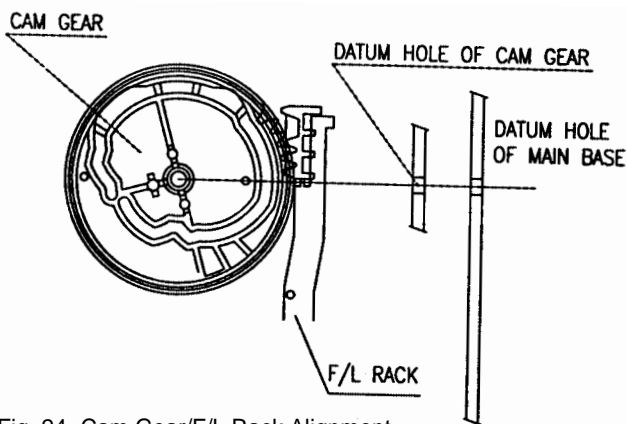


Fig. 24- Cam Gear/F/L Rack Alignment

S/T Main & Sub Brakes Removal (Fig. 25)

1. Unhook the main brake spring from the T main brake lever.
2. Disconnect the main brake lever assembly and T main brake lever from the main base.
3. Unhook the s sub brake spring from the main base and disconnect the s sub brake lever assembly from the main base.
4. Unhook the T sub brake spring from the main base and disconnect the T sub brake lever assembly from the main base.

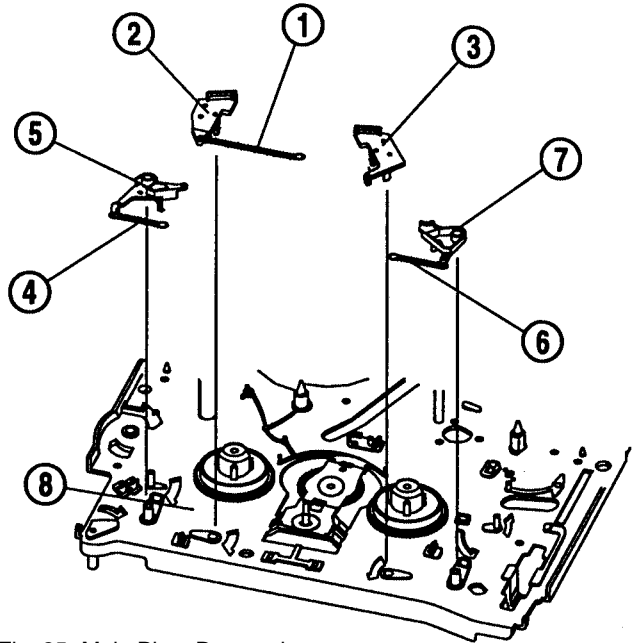


Fig. 25- Main Plate Removal

Tension Band Assembly Removal (Fig. 26, 27)

1. Remove the tension spring from the main base (Fig. 26)
2. Turn the deck mechanism upside down (fig. 27) is facing down (fig. 27)

NOTE :

- After reassembling, adjust the position of the tension pole as shown in fig. 28.
- Avoid getting grease or oil on the felt section of the band brake.

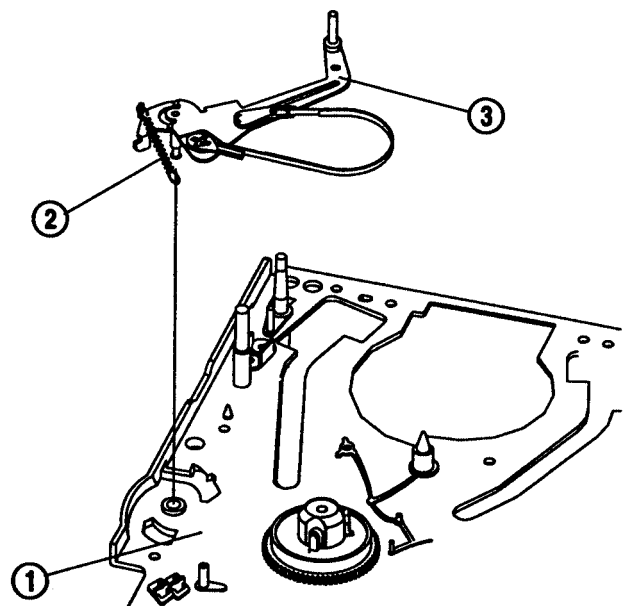


Fig. 26- Tension Band Assembly Removal (1)

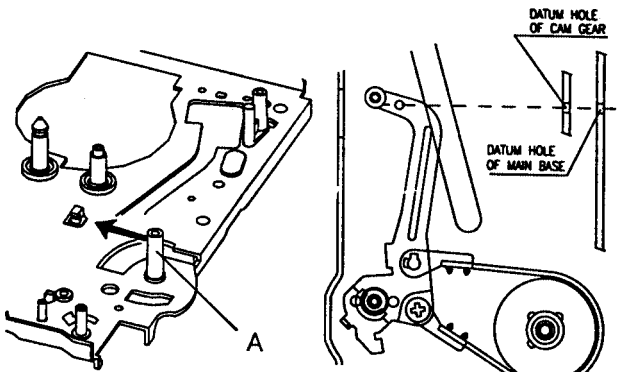


Fig. 27- Tension Band Assembly Removal (2)

Fig. 28- Tension Band Assembly Alignment With Main Base

Capstan Motor Removal (Fig. 29)

Remove three (3) screws and remove the capstan motor.

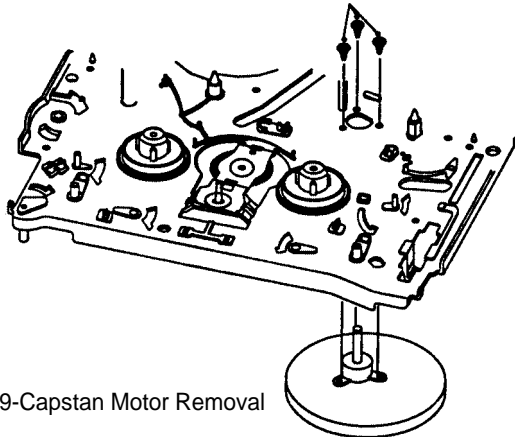


Fig. 29-Capstan Motor Removal

Idler Plate/Reel Table Removal (fig. 30)

1. Remove one polywasher from the idler plate and remove the idler plate from the main base.
2. Remove the reel tables and the two polysliders from the deck mechanism.

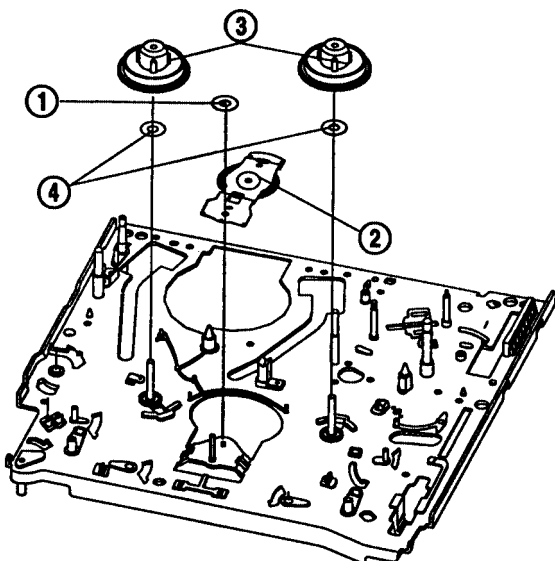


Fig. 30- Idler Plate/Reel Table Removal

FE Head Removal (fig. 31)

Remove one (1) screw (1) and lift the FE head (2) from the main base.

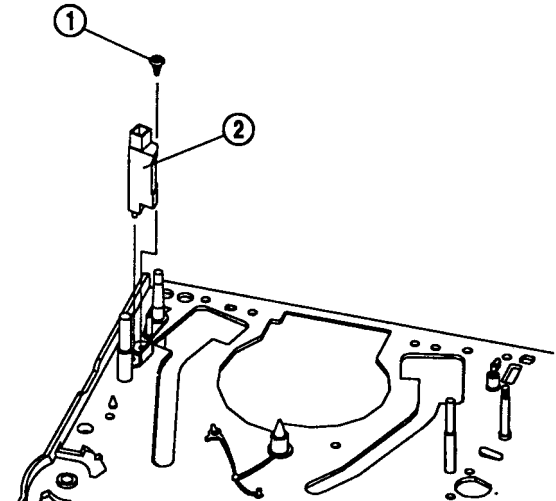


Fig. 31- FE Head Removal

Reel Gear Total Ass'y and Connect Plate Removal (fig. 32)

1. Turn the deck mechanism upside down and remove one polywasher.
2. Release the tab "B" of the main base and part the reel gear total ass'y from the main base.
3. Push the connect plate to the left direction and separate it from the main base.

NOTE :

- When removing the connect plate with the the F/L rack installed, take care not to damage/bend the connect plate.
- When assembling or disassembling, take care not to get oil or grease on the reel belt.

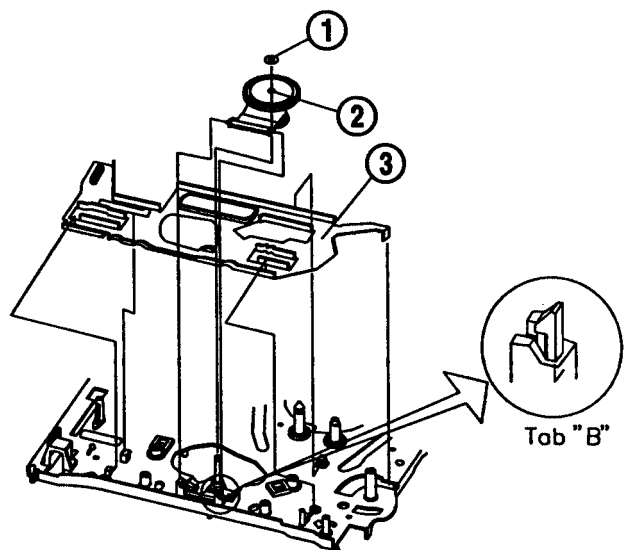


Fig. 32- Reel gear total ass'y and Connect Plate Removal

Some disassembly is required to access the adjustment locations. Refer to the "Disassembly Selection" in this publication for disassembly instructions.

Caution : Use an isolation transformer when servicing.

5. Mechanical Checks/Gear Alignment (fig. 1, 2, 3, 4, 5)

When mechanical problems occur or when reassembling parts in this mechanism, be sure to confirm the following instructions to confirm the following:

1. Make sure that the datum hole of the cam gear "A" is aligned with the hole "B" in the main base in the EJECT mode (fig. 1)

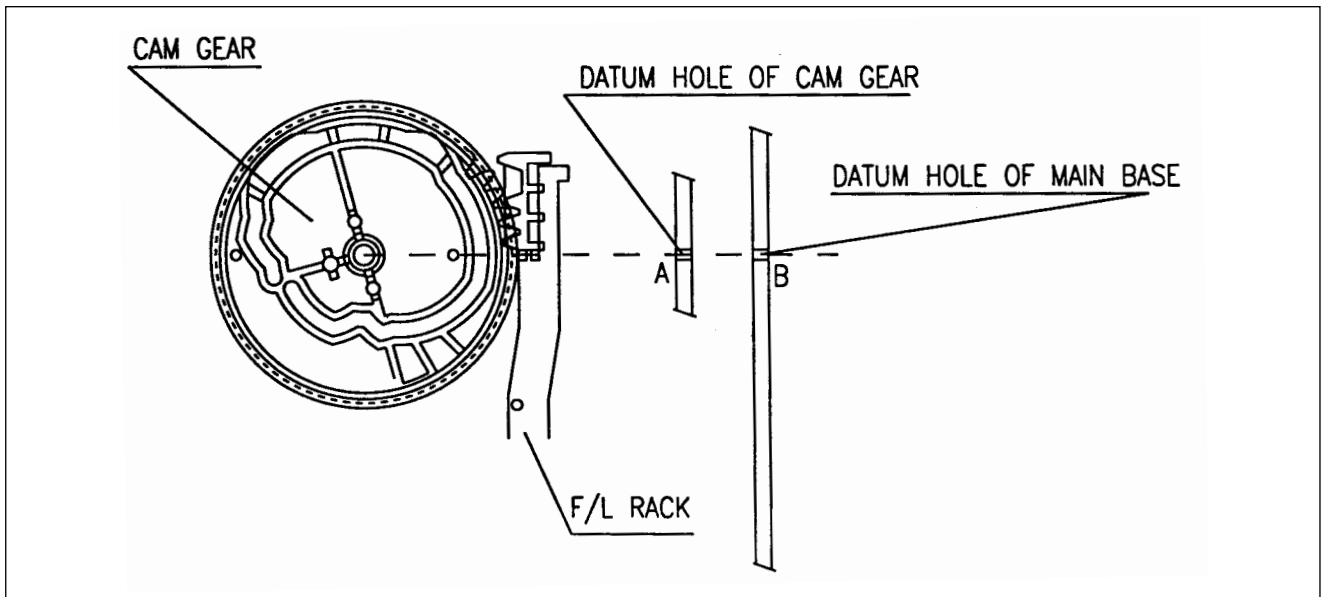


Fig. 1– Mechanical Checks/Cam Gear and F/L Alignmen

2. Make sure that the part of the relay lever "A" which is assembled with CONNECT PLATE is fully rotated up to the left and of the hole "B" (Fig. 2)

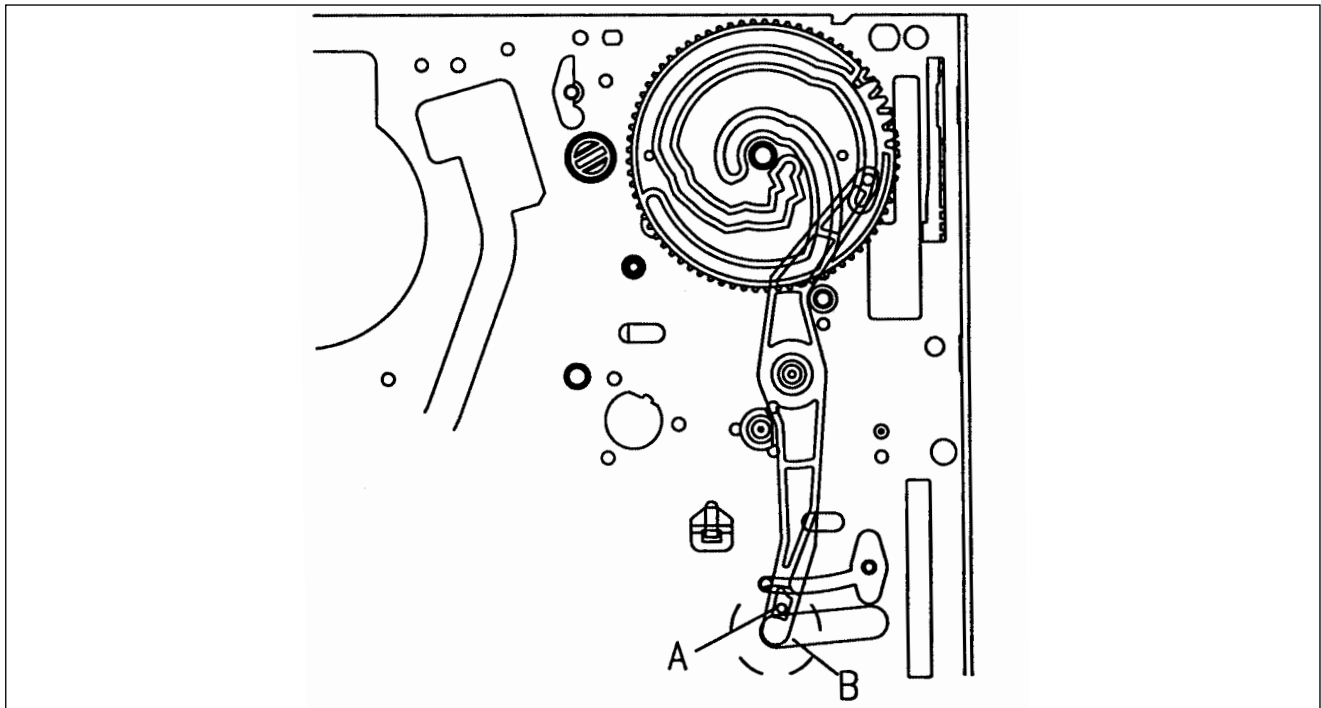


Fig. 2- Mechanical Checks/relay Lever and Cam Gear Alinment

3. There are two (2) triangular marks on the mode sense switch. When installing the L/C bracket assembly on the main base, confirm that the two (2) triangular marks aligned with each other in the EJECT mode (Fig. 3)

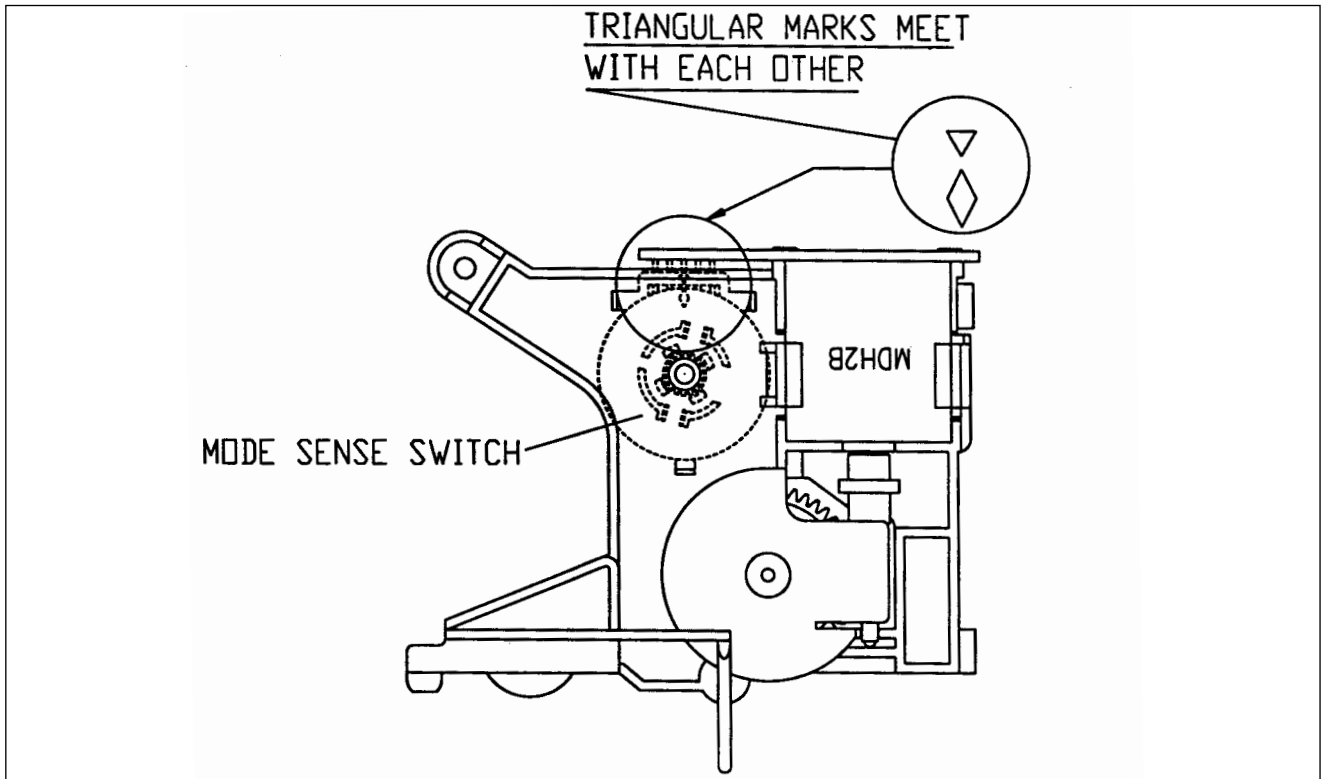


Fig. 3 - Mechanical checks/Mode Sense S/W Alignment

4. Make sure that the boss "A" of the Pinch Lever Total Ass'y is positioned at the point "B" of the cam gear in EJECT mode (fig. 4).

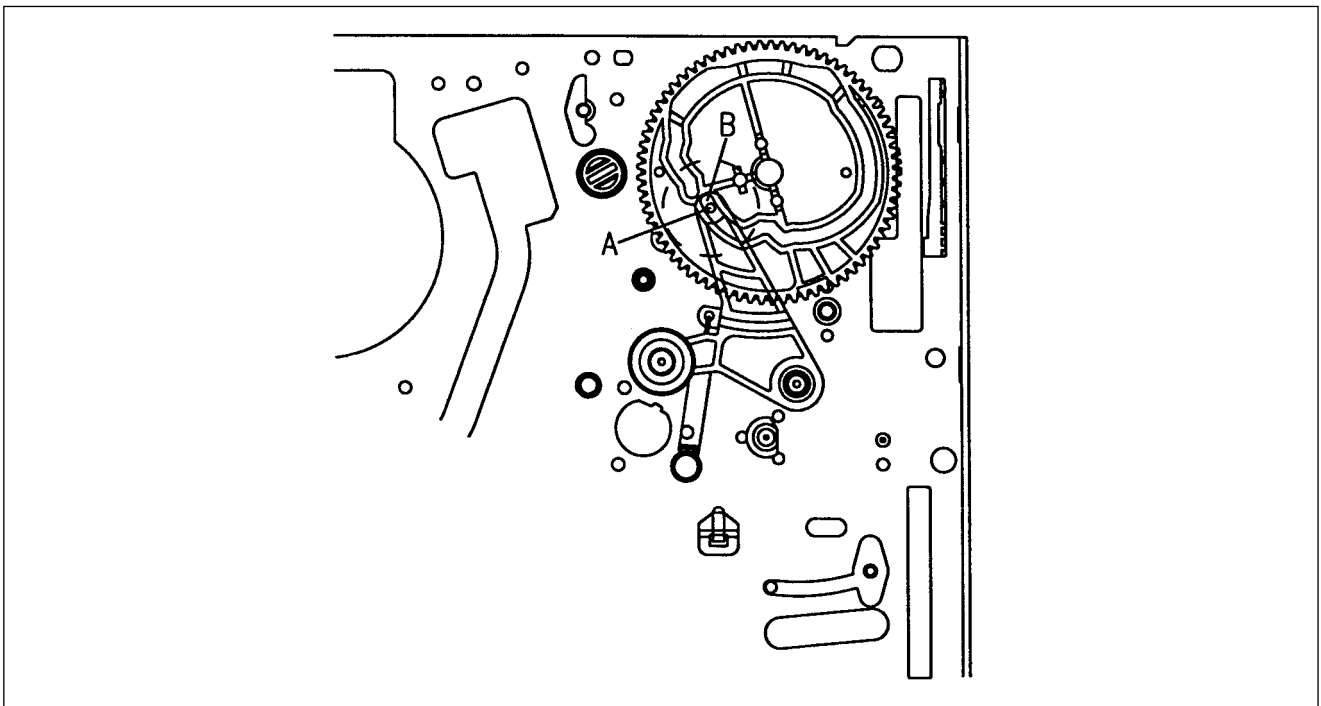


Fig. 4 – Mechanical Checks/Pinch Lever and Cam Gear Alignment

5. Confirm that the triangular mark "A" on the Loading Gear L Ass'y is aligned with the notch "B" in the Loading Gear R Ass'y in EJECT mode (Fig. 5)
6. Make sure that the teeth of the Loading Rack are aligned with the those of the Loading Gear R so that hole "C" of the Loading Rack aligns with the circular mark "D" on the Loading Gear R (fig. 5)

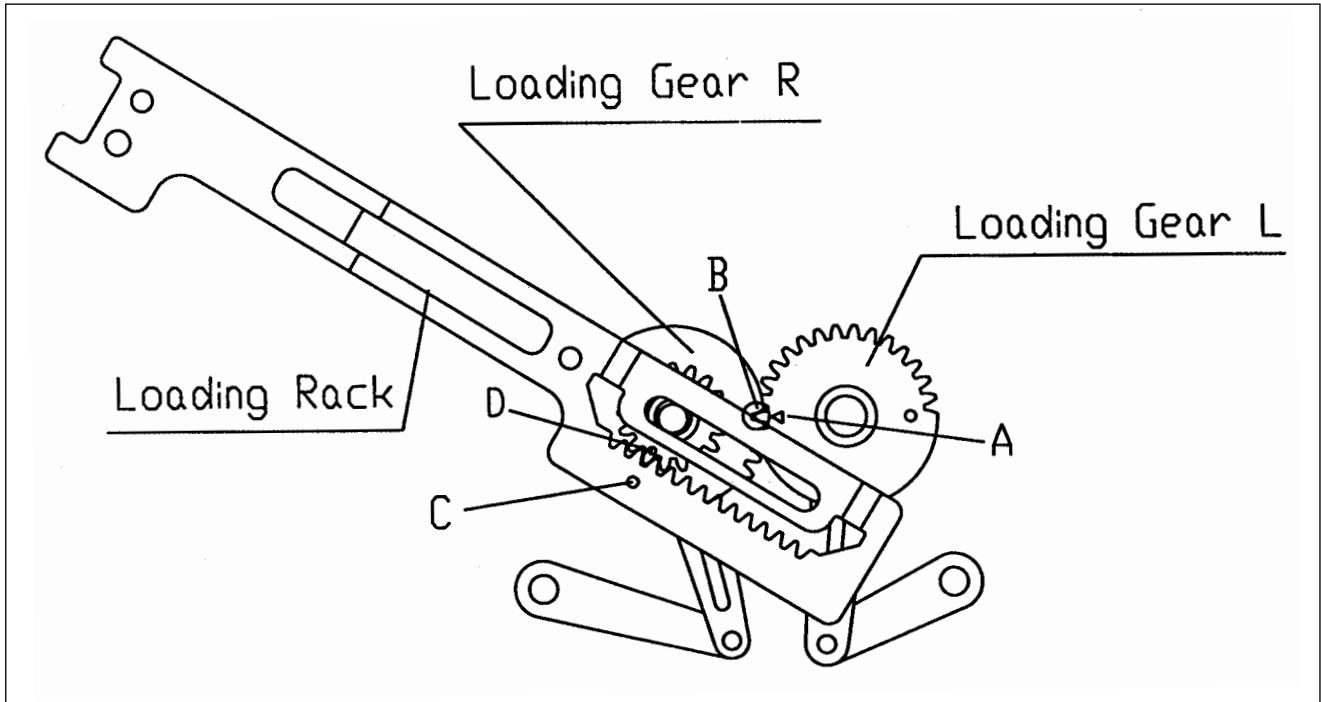


Fig. 5- Mechanical Checks/Loading Loading Rack and Loading Gear Alignment

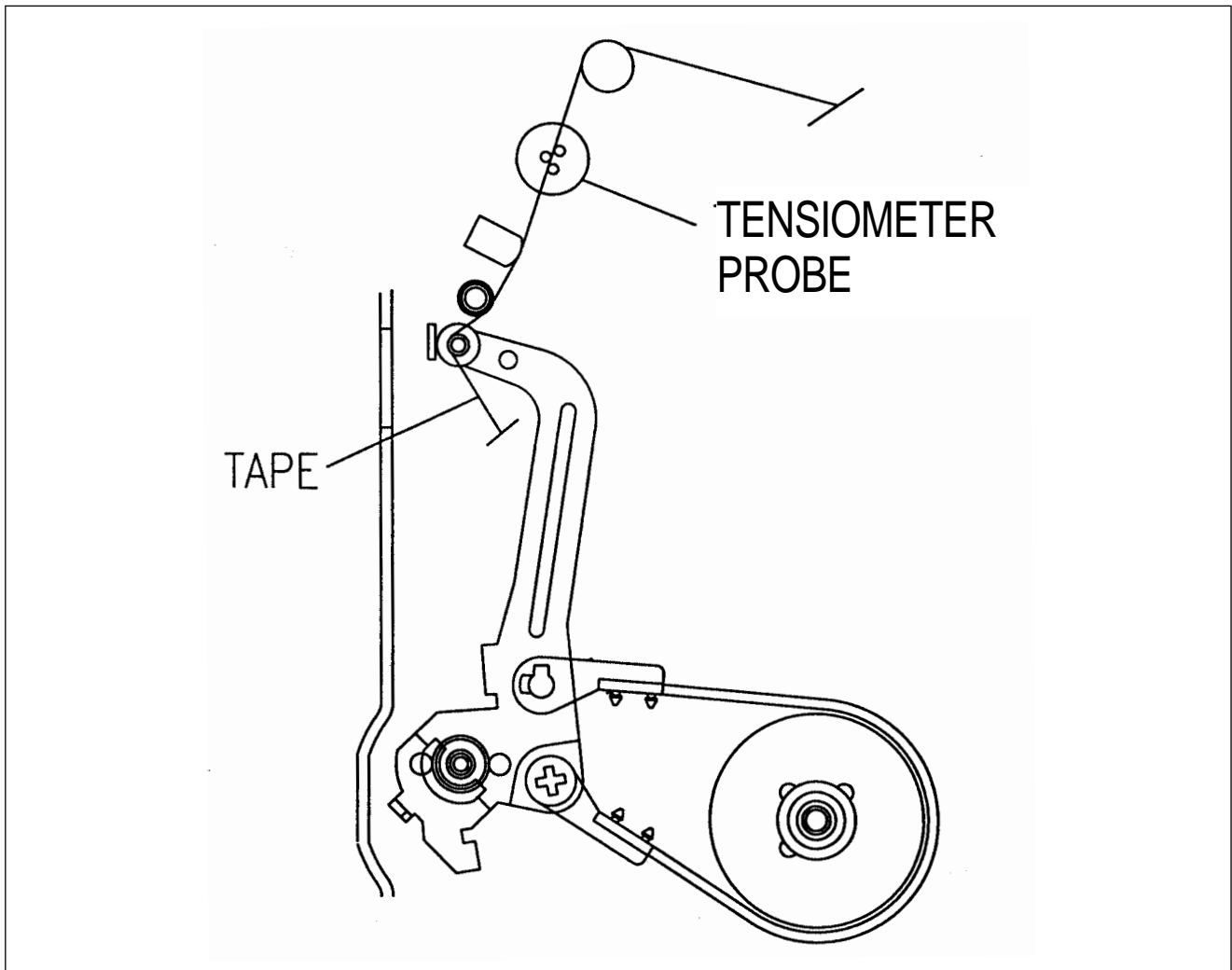
6. Tension checks

Back Tension Measurement /Adjustment (fig. 6, 7)

1. Confirm that the position of the tension pole is correctly positioned. If not, refer to the "Tension Pole Position Adjustment Procedures"
2. Play back a T-120 tape from the beginning for about 20 seconds (wait until tape transporting system comes to be stable).
3. Insert the Tensiometer on the tape path (fig. 6) and measure the back tension. the measured result must meet the specification (25-33gr).
4. If the result is not within the specification, adjust the tension spring (If the measured result exceeds the specification, locate the spring on the hook "A". If the value does not reach the specification, locate the spring on the hook "B".) and repeat the step 1 thru 3 of "Tension Pole Position Adjustment" (fig. 7).

NOTE :

- Make sure that all of the three probes of the Tensiometer are on contact with the tape, but not with any other parts of the



Deck mechanism.

Fig. 6 - Back Tension Measurement/Adjustment

- It is recommended that the measurement should repeated at least three times to guarantee an accurate reading.

Operating the VCR Without a Cassette Tape

1. Remove the cassette Loading Mechanism.
2. By hand revolve the worm counterclockwise 7-8 times until pole base loading process starts automatically.
3. Then PLAY mode appears. If you want ANOTHER mode, Press the desired button.
4. If the mechanism is in the desired mode, remove the Power.

Tension Pole Position Adjustment

1. Make the mode PLAY without a cassette loaded. Refer to "Operating the VCR Without a Cassette Tape".
2. Confirm that the datum hole of the tension lever is coincident with that of the main base.
3. If the above confirmation is not satisfying, turn Band Brake Cap clockwise or counterclockwise until the two holes are coincident with each other.

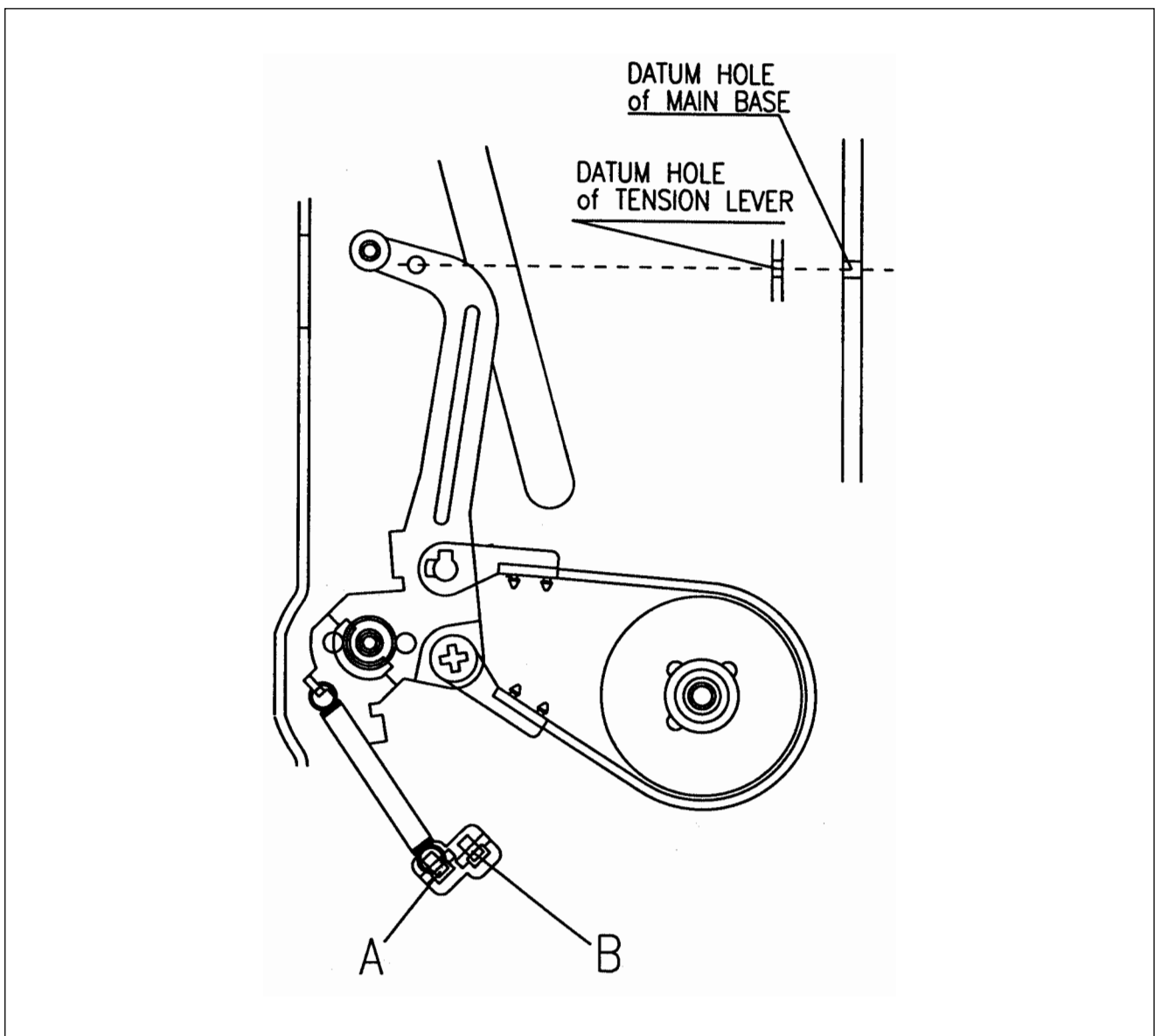


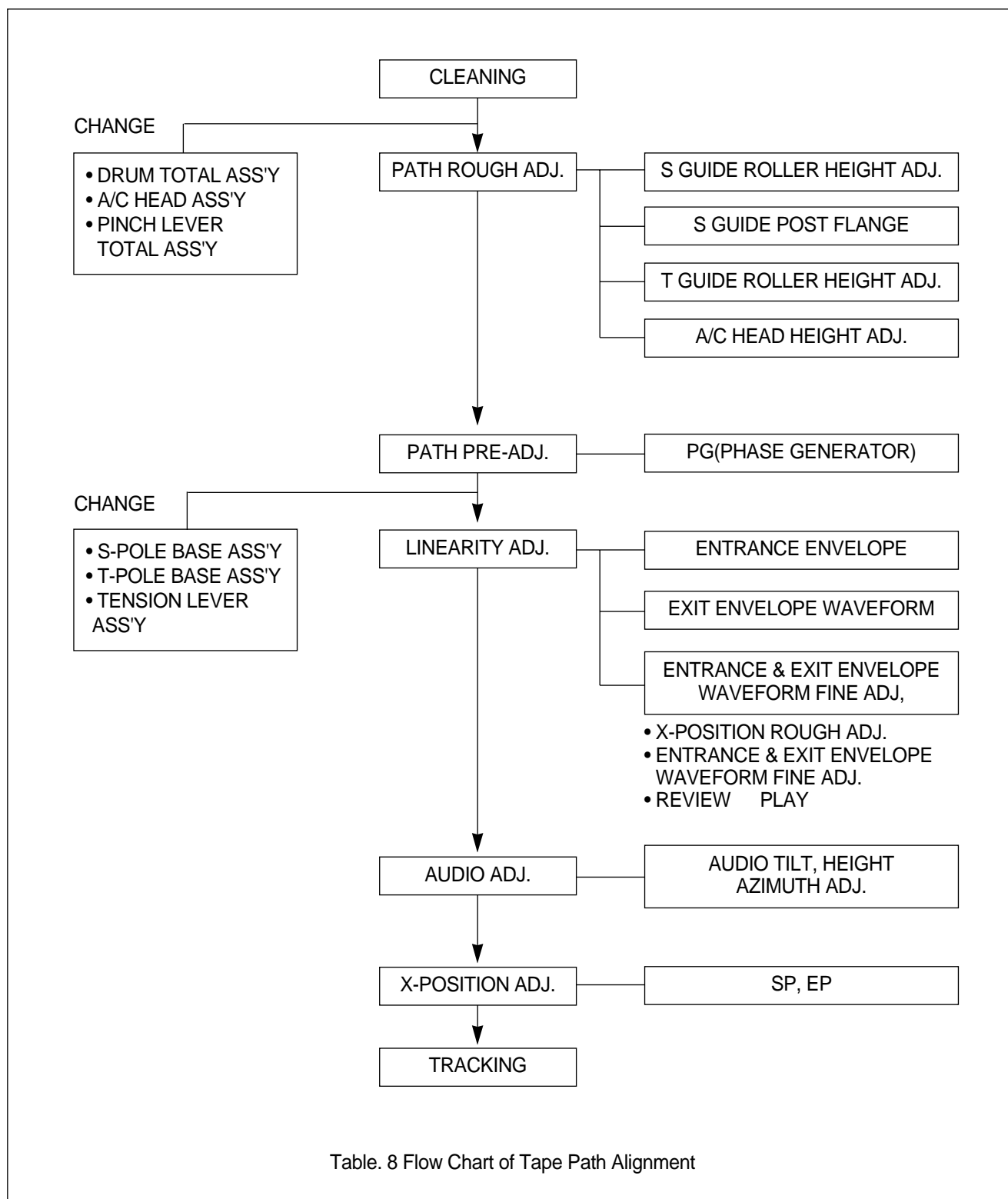
Fig. 7- Tension Pole Position Adjustment

MECHANICAL ADJUSTMENTS

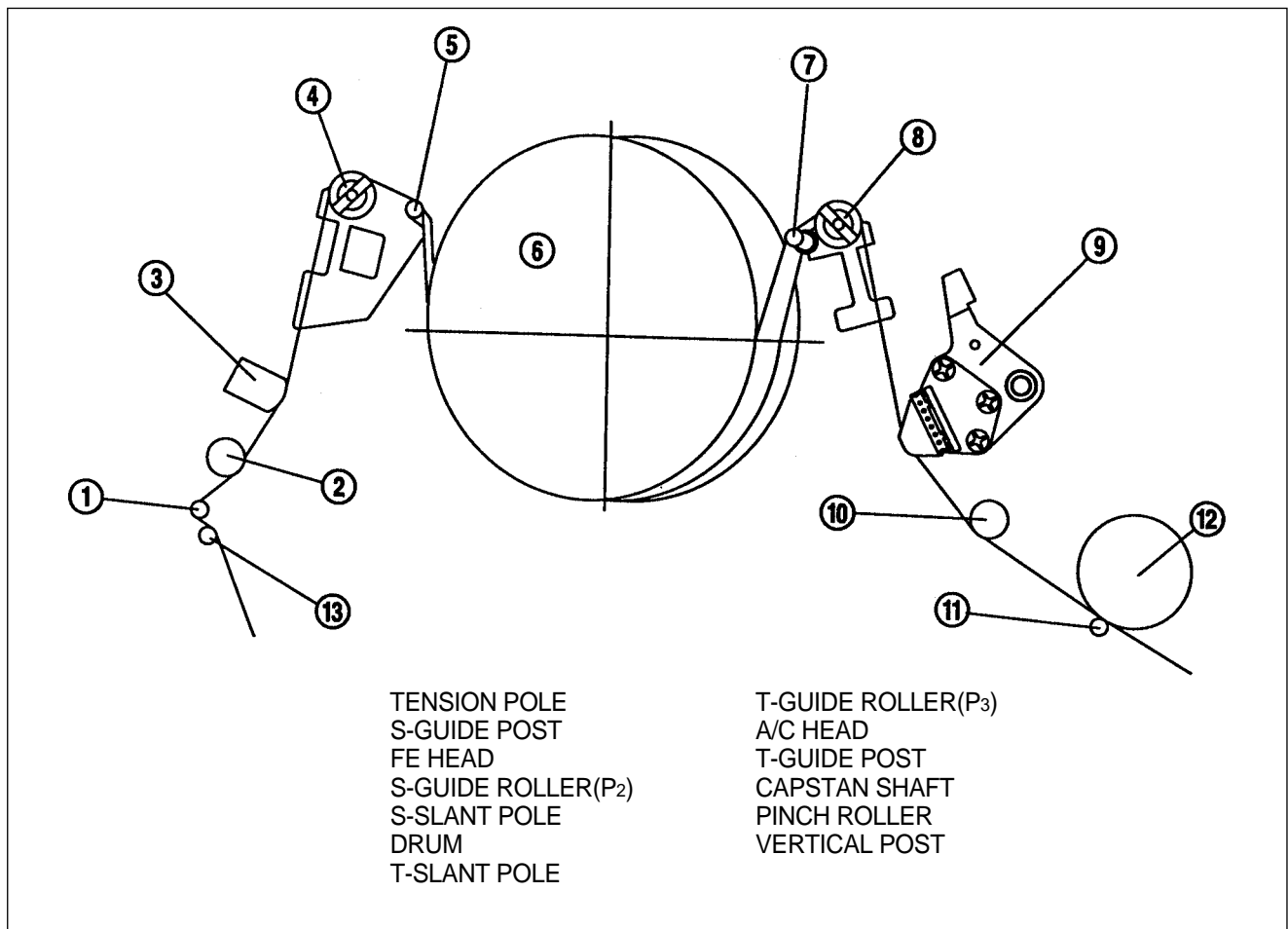
Tape Path Alignment Procedures

The tape transporting system is precisely aligned at the factory and under the normal circumstances will not require adjustment. However, if noise appears in the playback picture, it can be considered that the tape damage occurred or the tape path has been changed, readjustment of the tape path is necessary.

ADJUSTMENT FLOW FOR THE TAPE TRANSPORTING SYSTEM



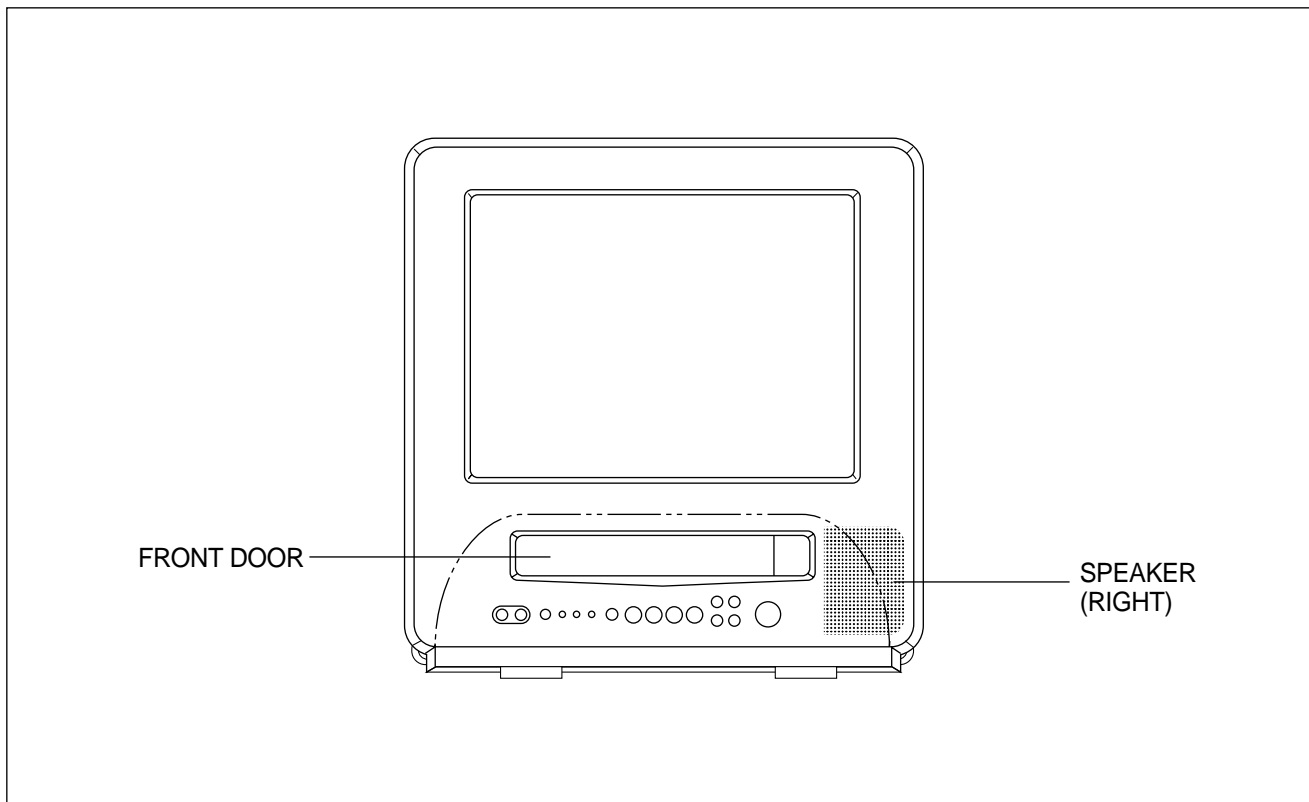
THE SCHEMATIC DIAGRAM OF TAPE TRANSPORTING SYSTEM



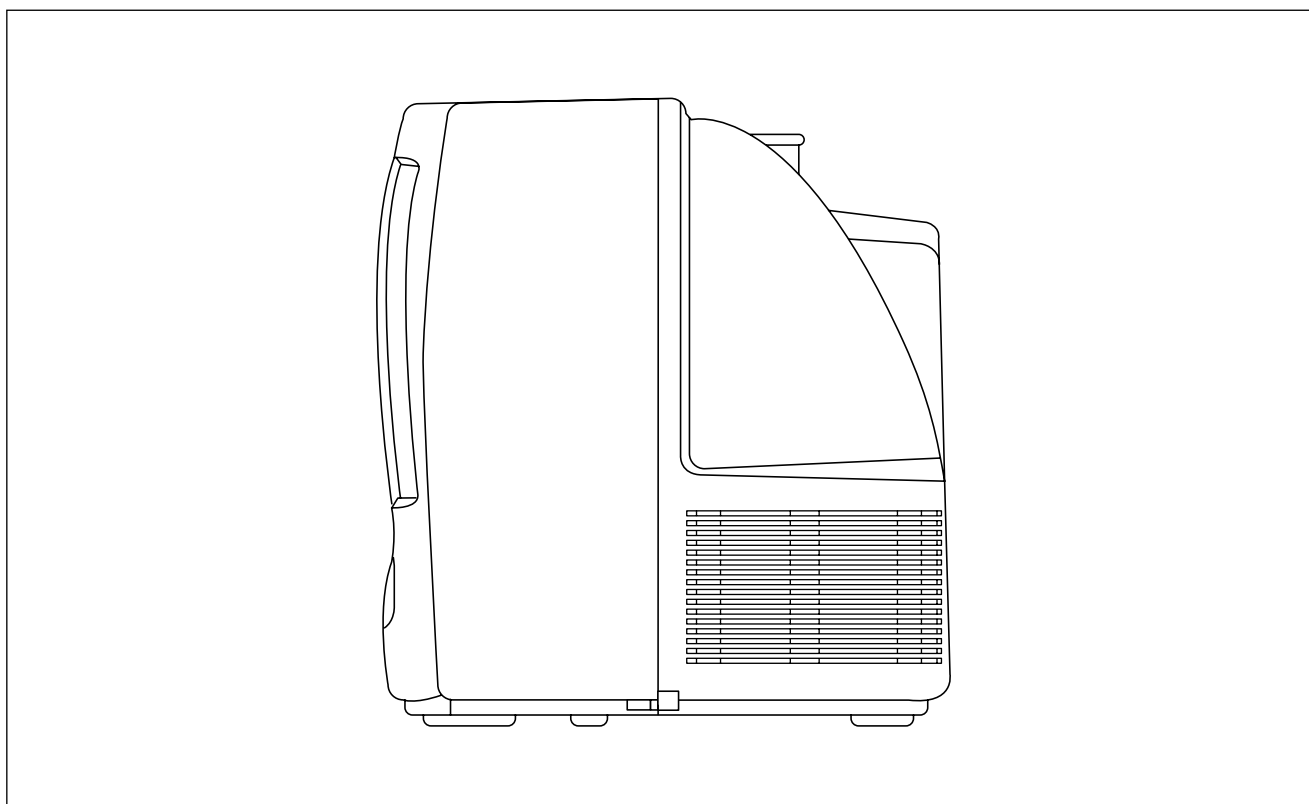
SHAPE & EQUIPMENT OF DVN-14/20F6N

1. DVN-14F6N/DVN-20F6N

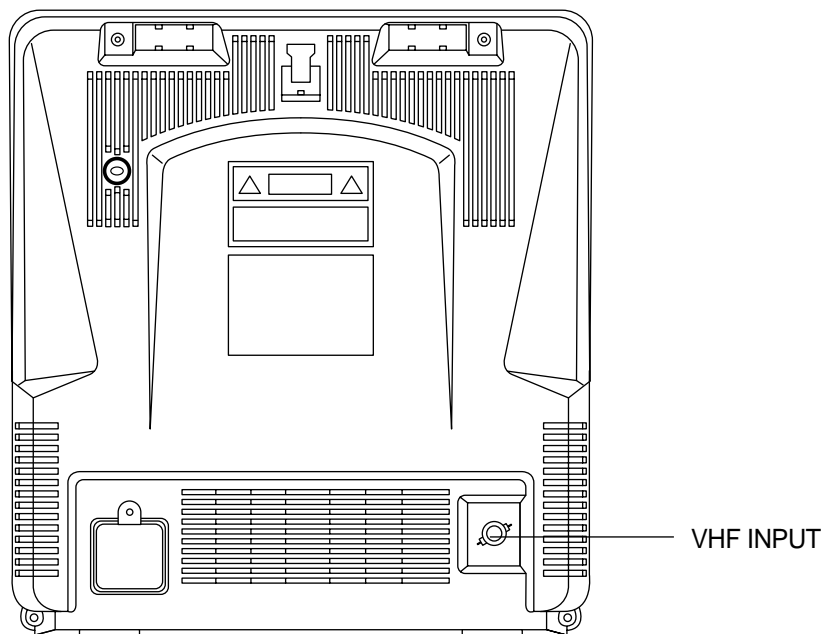
1-1. FRONT OF TV/VCR



1-2. SIDE OF TV/VCR



1-3. REAR OF TV/VCR (DVN-14F6N ONLY)



* Rear of TV/VCR's Shape of DVN-20F6N is similar to DVN-14F6N'S

VHF Input

connect VHF antenna to this terminal.

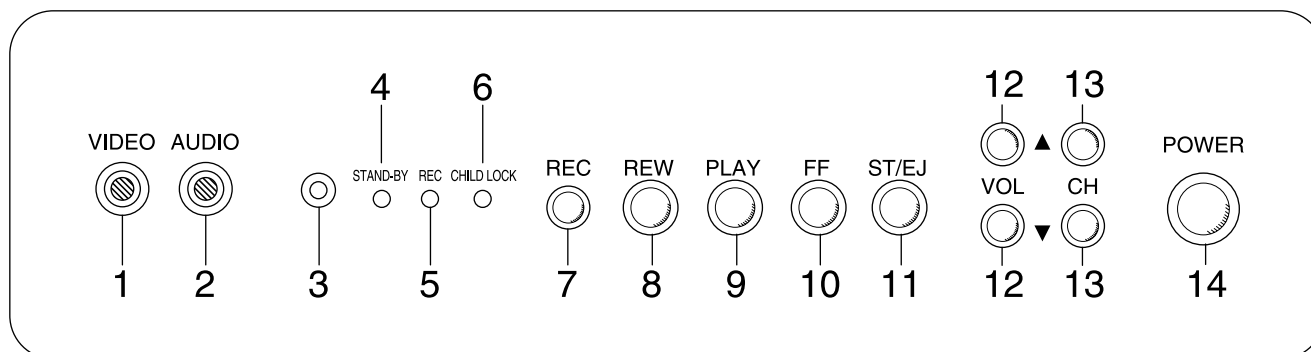
2. PANEL VIEW

2-1. FRONT PANEL

The section below summarizes the buttons, controls, and terminals that you will use with your TV.

Your TV/VCR's front Panel

Below you will find short descriptions of the buttons and indicators on the front panel. These are used following functions.



1 VIDEO IN jack

Use this jack to receive a video signal from another A/V component.

2 AUDIO IN jack

Use this jack to receive an audio signal from another A/V component.

3 Remote control receiver

This receiver receives a signal from your remote control. Do not block it.

4 STAND-BY (red) indicator

This indicator lights up when the power is off.

5 REC (Green) indicator

this indicator blinks when recording and lights up when set for timer recording.

6. CHILD LOCK (Yellow) indicator

This indicator lights up when the child lock is set.

7. REC button (record)

Press this button to begin recording. Press repeatedly to set a recording time using One-Touch Recording (OTR).

8 REW button (rewind)

Use this button to rewind the tape.

9 PLAY button

Press this button to begin normal playback of a tape.

10 FF button (fast forward)

Use this button to "fast forward" a tape.

11 ST/EJ button (stop/eject)

Press this button when a tape is moving to stop the tape. Press this button when the tape is stopped to eject it.

12 VOL buttons (volume)

Use these buttons to change your TV/VCR's volume.

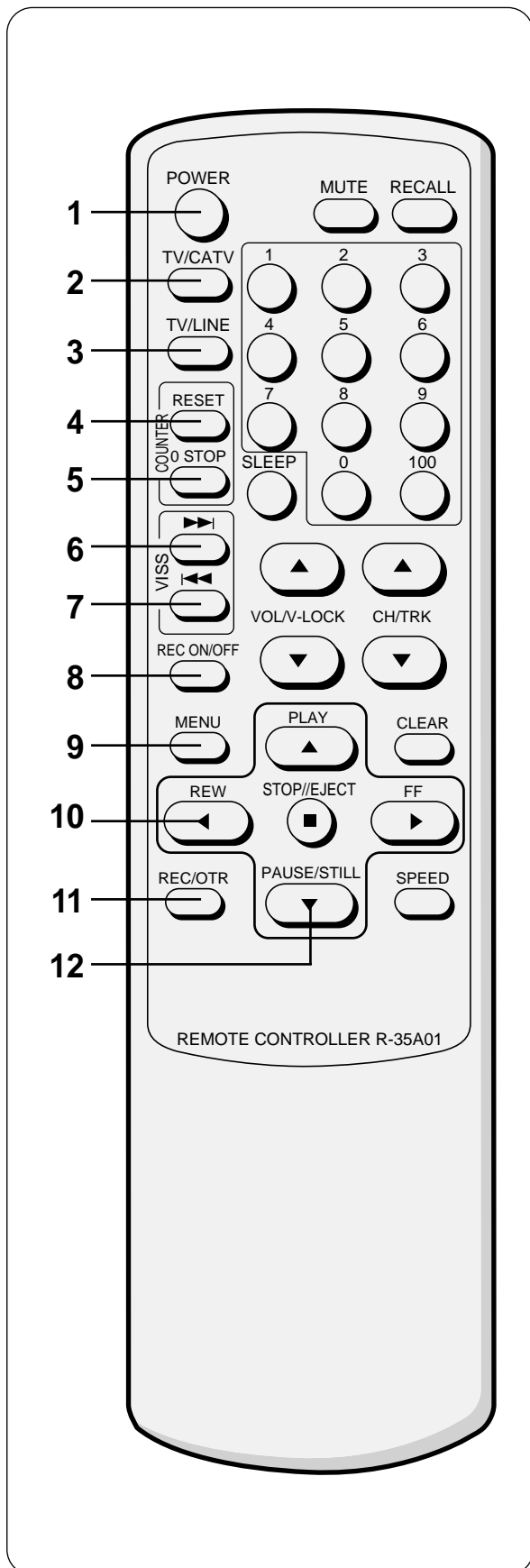
13 CH buttons (channel)

Use these buttons to change channels on your TV/VCR. You will also use these buttons to adjust the tracking.

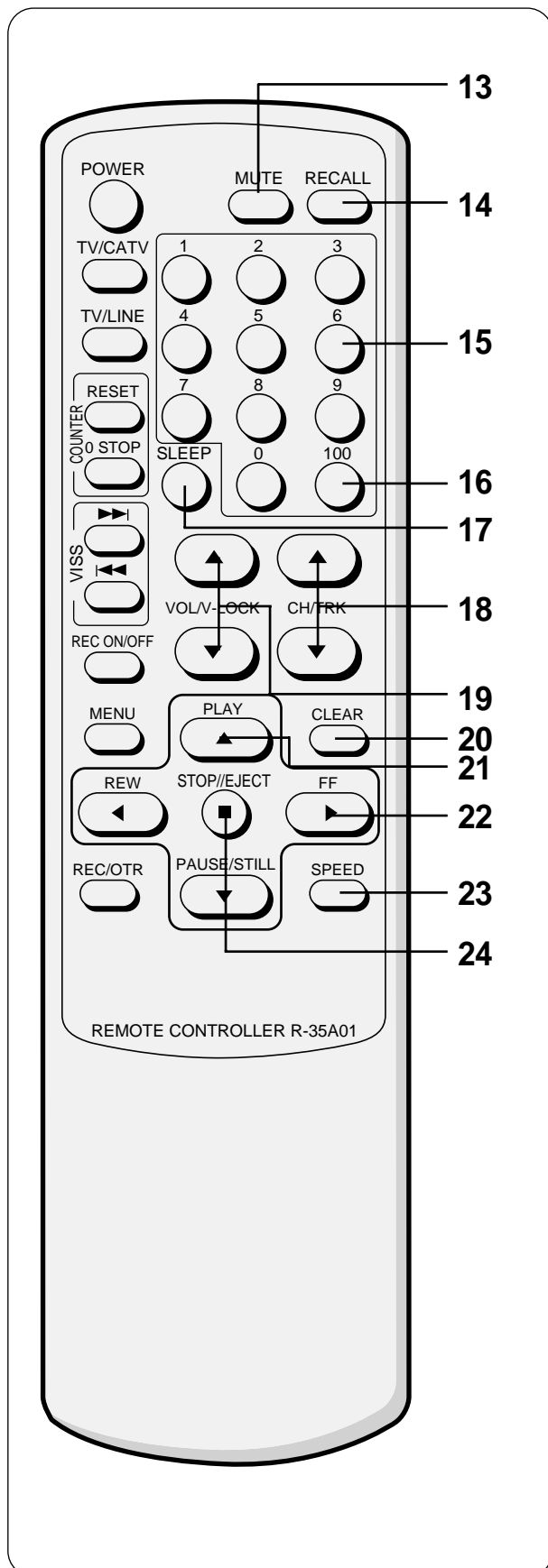
14 Power button

Use this button to turn your TV on or off.

3. Remote controller (DVN-14F6N/20F6N)



- 1 POWER**
Use this button to turn your TV/VCR on or off.
- 2 TV/CATV**
Use the button to set up your TV/VCR to receive signals from an antenna (TV) or a cable system (CATV).
- 3 TV/LINE**
Use this button to select between viewing the signal coming from the antenna terminal (TV) or the signal coming from the A/V jacks (LINE).
- 4 RESET**
Press this button to reset the counter to 0:00:00.
- 5 O STOP**
Press this button to automatically rewind the tape to the 0:00:00 point.
- 6 VISS**
Press this button to find the next index mark on a tape and begin playing.
- 7 VISS**
Press this button to find the most recent index mark on a tape and begin playing.
- 8 REC ON/OFF**
Use this button to enable or disable timer recording.
- 9 MENU**
press this button to turn the on-screen menu system on and off.
- 10 REW (rewind)**
Use this button to rewind the tape or to change items in the menu system.
- 11 REC/OTR**
Press this button to begin recording.
Press repeatedly to set a recording time using One-Touch Recording (OTR).
- 12 PAUSE/STILL**
Press to temporarily stop the tape during recording or playback, or to move the cursor in the menu system.



13 MUTE

Use to turn the TV/VCR's sound on and off.

14 RECALL

Press this button to display the current time, the counter, channel number or other status items.

15 Number buttons (0-9)

Use these buttons to change channels or select menu items.

16 100

Use this button if you wish to view a channel greater than 99.

17 SLEEP

Use this button to program the TV/VCR to turn off after a certain time.

18 CH/TRACKING

Use these buttons to change channels on your TV or to adjust the tracking of a video tape during playback.

19 VOL/V-LOCK

Press to adjust the volume of the TV/VCR. You can also use these button to eliminate video noise when displaying a still frame.

20 CLEAR

Press this button to erase timer recording settings.

21 PLAY

Press this button to begin normal playback of a tape, or to move the cursor in the menu system.

22 FF (fast forward)

Use this button to "fast-forward" a tape or to change items in the menu system.

23 SPEED

Use this button to select the SP, LP, or SLP tape speed.

24 STOP/EJECT

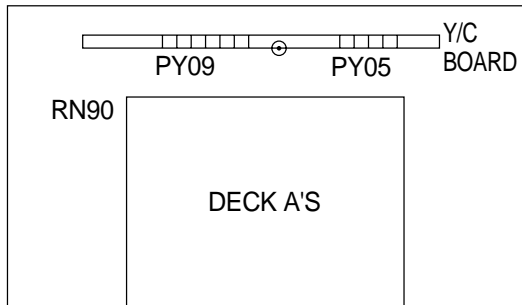
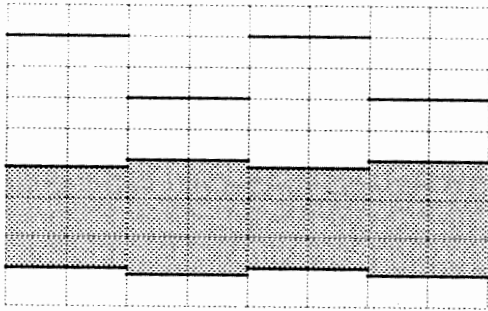
Press this button when a tape is moving to stop the tape ; press it when the tape is stopped to eject it. Also use this button to activate items in the menu system.

ELECTRICAL ADJUSTMENTS

1. SERVO

1-1) X-path and P₂, P₃ Adjustment

Item	Mode	Adjustment parts	Check point	Test equipments	Test tape	Input signal
X-path P ₂ , P ₃	PLAY	CORN SCREW P ₂ , P ₃	PY09	Oscilloscope	DN-1	

Location of Adjustment Parts	Observation Waveform
<p>MAIN PCB</p>  <p>MAIN PCB</p>	<p>Horizontal Axis : S/DIV Vertical Axis : CH1 : H/SW, CH2 : ENVELOPE</p> 

Adjustment Procedure

1. Preparation

- 1) Set the AUTO TRACKING to OFF using REMOCON.
- 2) Play back the Test tape (Color Bar)
- 3) Set the oscilloscope to the CHOP mode. Connect CH1 to the H/W (PY09) and CH2 to the ENVELOPE (PY09) and trigger the scope with the signal from CH1.

2. Adjustment

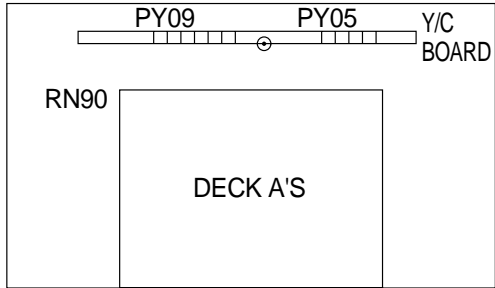
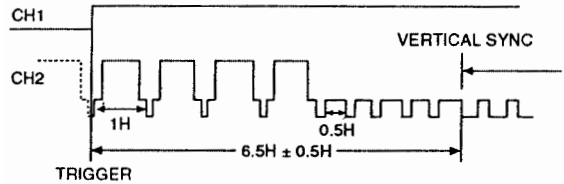
- 1) Adjust CORN SCREW to position to maximize the width of the ENVELOPE pulse.
- 2) Adjust P₂ to position which the edge of ENVELOPE signal has equal degree to the body of ENVELOPE signal. Adjusting P₃ is same to P₂'s.

3. Remark

- 1) After adjusting, press stop button to eject the tape.
- 2) Insert the tape into deck to confirm Autotracking.
- 3) If Normal screen is showed up as soon as it is start to play, adjustment becomes good.
If not, Adjust repeatedly to operate autotracking.
- 4) To know P₂, P₃, and CORN SCREW, refer from 'The schematic diagram of tape transporting system' on page 23

1-2) PLAYBACK PHASE Adjustment

Mode	Adjustment parts	Check point	Test equipments	Test tape	Input signal
Play	RN90	RY05	Oscilloscope	DN-1	

Location of Adjustment Parts	Observation Waveform
<p>MAIN PCB</p> 	<p>Horizontal Axis : 100μS/DIV Vertical Axis : CH1 : SW30, CH2:V.OUT</p> 

• Adjustment Procedure

1. Preparation

- 1) Play back the Test tape (Color Bar).
- 2) Connect scope's connector to PY 09
- 3) Set the Oscilloscope to the chop mode.
Connect CH1 to the H/SW(PY09) and CH2 to the V-OUT(PY09) and trigger the scope with the signal from CH1.

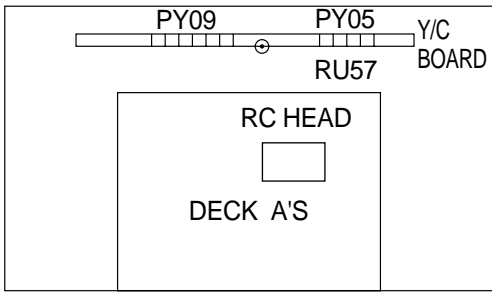
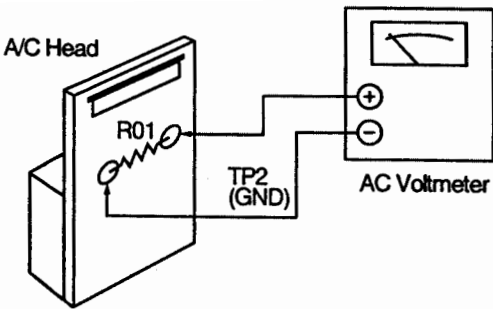
2. Adjustment

- 1) Adjust RN90 to position the rising edge of SW PULSE at 6.5H from the V-SYNC.

2. AUDIO

2-1) AUDIO CIRCUIT ADJUSTMENT METHOD

Item	Mode	Adjustment parts	Check point	Test equipments	Test tape	Input signal
Audio Record Bias	REC	RU57	RC HEAD 10Ω	Audio level meter	Blank tape	

Location of Adjustment Parts	Observation Waveform
<p>MAIN PCB</p>  <p>MAIN PCB PARTS SIDE</p>	<p>Horizontal Axis : Vertical Axis :</p> 

• Adjustment Procedure

1. Preparation

- 1) Set REC BAIS to ON mode using REMOCON. (then, front pannel's REC LED will be lighted up.)
- 2) Supply the signal in the OPEN mode.
- 3) Connect the Audio level meter to RC HEAD 10Ω (on solder side).

2. Adjustment

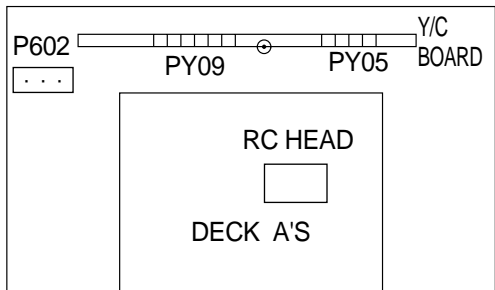
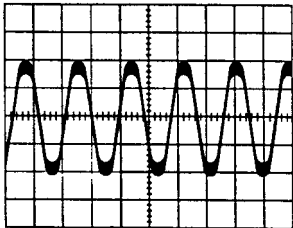
- 1) Adjust RU57 to obtain [3.0]mVrms.

3. Adjustment Inspection Standard : [3.0 ± 0.1mVrms]

- If you don't have Service Remocon, You can set this rec mode by inserting a tape (with record top) and pushing rec button.

2-2) Audio Azimuth Adjustment

Item	Mode	Adjustment parts	Check point	Test equipments	Test tape	Input signal
Audio Azimuth Adjustment	PLAY	AC HEAD'S SCREW	P602 Osilloscope	Signal GEN.	DN-2 MONO Bar	7KHz

Location of Adjustment Parts	Observation Waveform
<p>MAIN PCB</p>  <p>MAIN PCB PARTS SIDE</p>	<p>Horizontal Axis : 0.1mS/DIV Vertical Axis : 0.1V/DIV</p> 

• Adjustment Procedure

1. Preparation

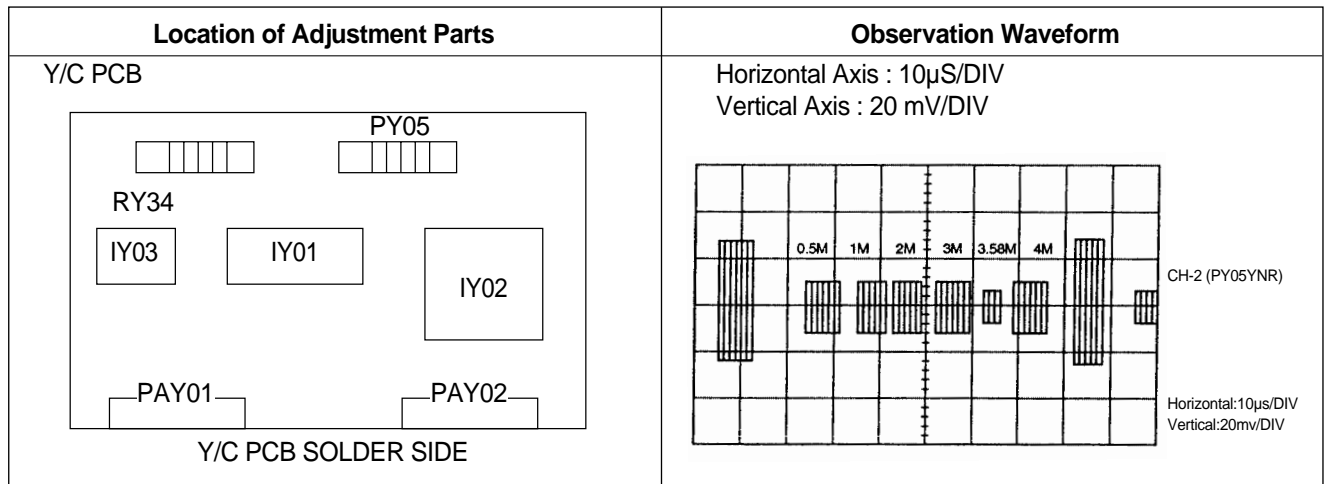
- 1) Set the VCR to the PLAY mode
- 2) Set the Scope connector to the P602.
- 3) Adjust first screw on the plate under the AC head to maximize scope's signal width.

2. Adjustment Inspection standard : [Maximum Point]

3. VIDEO

3-1) Y NOISE REDUCTION

Mode	Adjustment parts	Check point	Test equipments	Test tape	Input signal
EE	RY 34	PY05, PY09	Oscilloscope Signal gen.		Multi Burst with 3.58 MHz



• Adjustment Procedure

1. Preparation

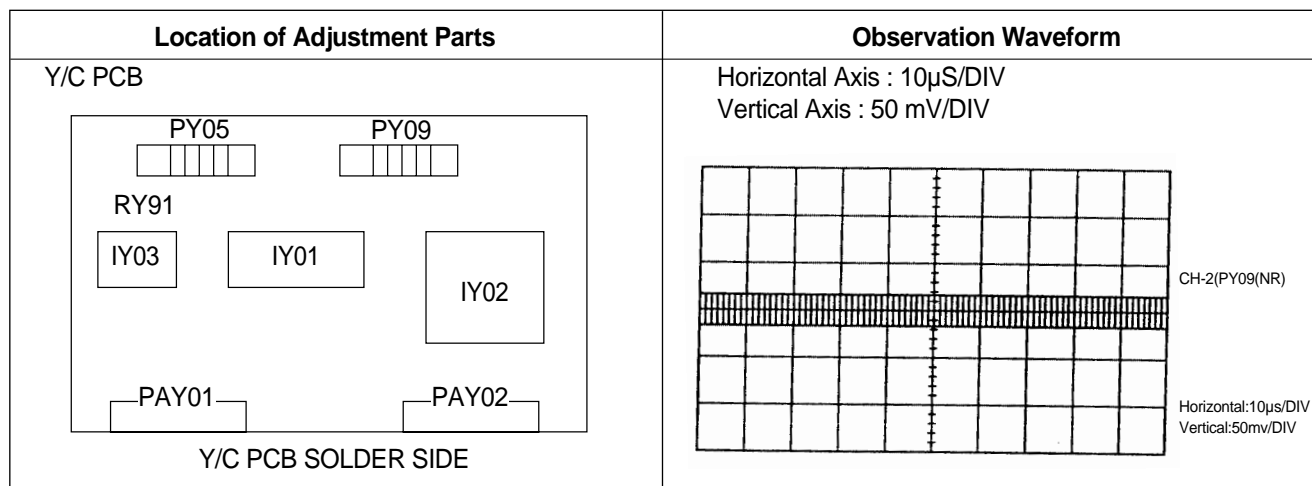
- 1) Supply the MULTI BURST signal to the VIDEO IN JACK.

2. Adjustment

- 1) Set the VCR to the STOP(EE) MODE.
- 2) Set the Oscilloscope to the chop mode.
Connect CH1 to the V-OUT(RY09) and CH2 to the CNR TP(RY05) and trigger the scope with the signal from CH1.
- 3) Adjust RY34 to the 3.58MHz Y component of MULTI BURST signal becomes less than [20]mVp-p.

3-2) COLOR NOISE REDUCTION

Mode	Adjustment parts	Check point	Test equipments	Test tape	Input signal
EE	RY 91	PY09	Signal gen. Oscilloscope		Color Bar



• Adjustment Procedure

1. Preparation

- 1) Supply the Color bar signal to the VIDEO LINE IN JACK.
- 2) Supply 5V to RY05.

2. Adjustment

- 1) Set the VCR to the STOP(EE) Mode.
- 2) Set the Oscilloscope to the chop mode.
Connect CH1 to the V-OUT(RY09) and CH2 to the YNR TP (RY05) and trigger the scope with the signal from CH1.
- 3) Adjust RY91 until Color signal becomes minimum.

SIGNAL FLOW

1. VIDEO & AUDIO

1-1. FROM RF TO COMPOSITE VIDEO

When the TIMER IC (I701) selects a certain channel from antenna, CLOCK, DATA, and ENABLE of I701 signals are inputted to the TUNER.

So, TUNER(U101) tunes up a certain channel frequency by means of PLL circuit operation and output IF (Intermediate Frequency) signal.

This IF signal through Q103, PRE-AMP stage, and SAW FILTER is inputted to I501 #8 and #9, and it is optimized by VCO and AFT.

As the result of these operations, COMPOSITE VIDEO SIGNAL comes from pin 51 of I501.

Because 4.5MHz sound frequency in the COMPOSITE VIDEO SIGNAL is eliminated by Z102 TRAP, only video signal in the COMPOSITE VIDEO SIGNAL is inputted to pin 45 of I501 and 4.5MHz sound frequency is inputted to pin 48 of I501 through Z103 FILTER.

1-2. COMPOSITE VIDEO SIGNAL

This CHASSIS includes three video signals. One is from RF(above mentioned), another is from A/V, and the third is from PLAY MODE.

Switching IC I503 controls these three final video signal.

Once one of the two signals(TV video signal from pin 45 of I501 and A/V video signal from pin 42 of I501) is selected, the selected signal is from pin 43 of I501 and it is inputted to pin 1 of I503.

Another video signal from PLAY MODE is inputted to pin 4 of I503.

Also, One of the two signals(video signal from pin 1 of I503 and video signal from PLAY MODE) is selected, and the selected signal is transmitted to pin 2 and pin 3 of I503.

Final video signal is inputted to pin 22 of I701 to detect CAPTION SIGNAL and it is also inputted to pin 38(C INPUT), pin (Y INPUT), pin 44(SYNC INPUT).

And R-Y signal is from pin 23, G-Y signal is from pin 24, B-Y signal is from pin 22, -Y signal is from pin 22, and those color difference signals are sent to CRT BOARD.

In CRT BOARD, those color difference signals are mixed and amplified by color difference drive method.

1-3. AUDIO SIGNAL

This CHASSIS includes three audio signals. One is from RF(above mentioned), another is from A/V, and the third is from PLAY MODE.

Switching IC I503 also controls these three audio signal.

TV Audio signal from pin 3 of I501 is inputted to pin 8 of I503.

A/V audio signal from A/V JACK is inputted to pin 11 of I503 and outputted to pin 9, pin 10.

So, that audio signal is inputted to pin 16 of IU01.

Audio signal from PLAY MODE is inputted to pin 2 of IU01.

One of the two audio signals(audio signal from PLAY MODE, audio signal from A/V mode) is selected and outputted to pin 22 of IU01 and inputted to pin 1 of I501.

Audio signal to be inputted pin 1 of I501 and controlled volume is outputted to pin 4 of I501.

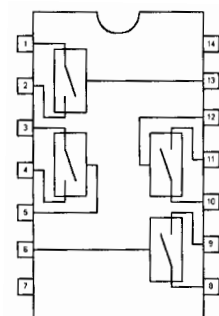
That audio signal is inputted to pin 3 of I601(SOUND AMP), and amplified by I601 and outputted to pin 5 of I601.

Finally that audio signal goes into SPEAKER.

SWITCHING TABLE OF I503

PIN \ MODE	RF (EE)	AV	PLAY	TOGGLE
5	L	L	H	VIDEO
6	H	L	L	AUDIO
12	L	H	H	AUDIO
13	H	H	L	VIDEO

* The input signal is transmitted to putput port when switching port is at logically high state.



(Top View)

2. Power circuit (Power supply circuit)

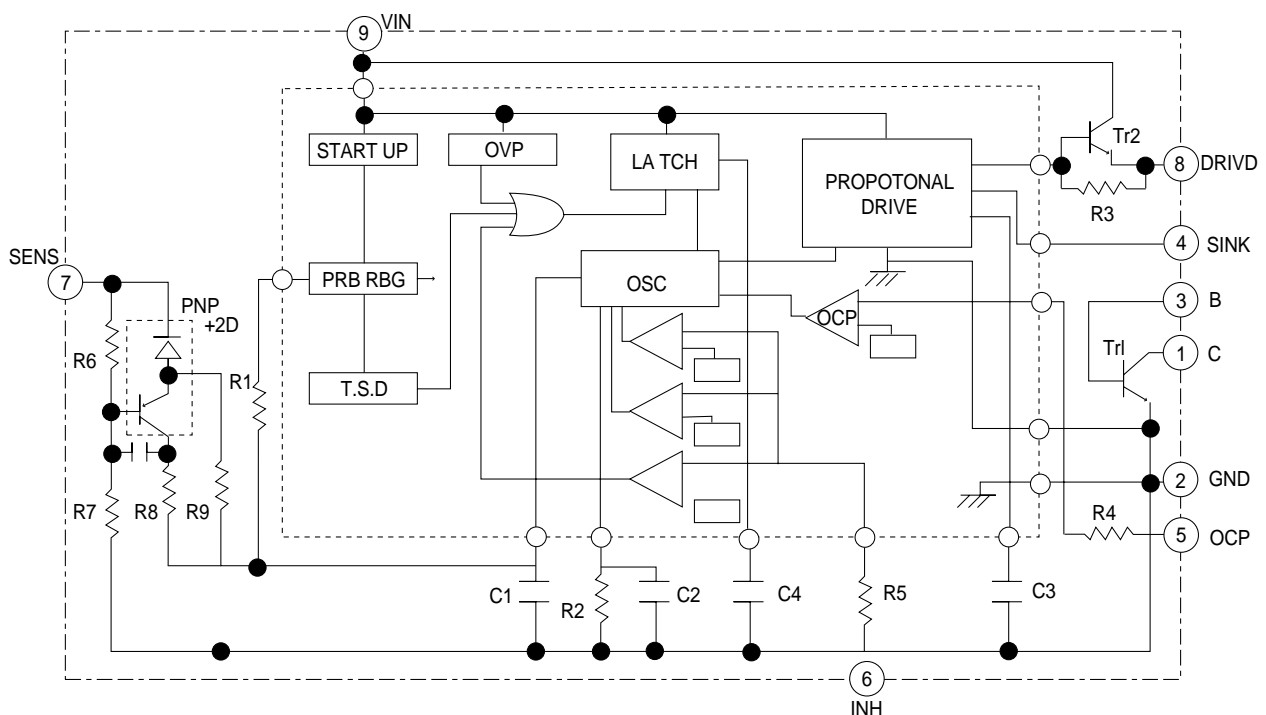
2-1. Abstract And Function

It selects SMPS(SWITCHING MODE POWER SUPPLY) which is possible to put in from AC 108V~132V/60Hz with SANKEN Ic STR-S5707 and supply the stable voltage which each circuit needs.
The voltage which electric resources circuit supplies is followed.

NO.	SUPPLY ELECTRIC RESOURCES	SOURCE	SUPPLY CIRCUIT	APPLICATION
1	DC 125V	TRANS SECOND RECTIFIED VOLTAGE D814	FBT PIF	FBT B+ For channel selecting(33V)
2	DC 12V (MOTOR 12V)	REGULATOR IC I805(PQ12RF11)	SERVO circuit	For driving DRUM, CAPSTAN MOTOR
3	DC 12V (ON/OFF 12V)	REGULATOR IC I804(PQ12RF11)	TUNER IF AMP circuit AUDIO circuit VIDEO circuit	For channel selecting(9V, 5V) IF amp. circuit(9V), V/SIF(5V) For driving AUDIO I/O circuit For driving VIDEO, ANALOG circuit
4	DC 6.0V (EVER 5.3V)	REGULATOR IC I803(KIA7806)	SERVO, TIMER IC SYSCON IC circuit	For driving SYSCON, TIMER, SERVO circuit
5	DC 14V	TRANS SECOND RECTIFIED VOLTAGE D813	AUDIO circuit	AUDIO AMP. B+
6	DC 9V	REGULATOR IC I806 (KIA7809)	DEFLECTION circuit	VERTICAL IC B+ H. VCC

2-2. I801 STRS-5707

1) BLOCK DIAGRAM



2) Function of Each Terminal

No. of Terminal	Symbol	Description	Function
1	C	Collector Terminal	Collector of TRr(Power Transistor)
2	GND	Ground Terminal	Ground(Emitter of PTr)
3	B	Base Terminal	Base of PTr
4	SINK	Sink Terminal	Base Current (IS) Input
5	OCP	Overcurrent Protection Terminal	Overcurrent Sensing Signal Input
6	INH	Inhibit Terminal	Off Time Synchronizing
		Latch Terminal	Latch Circuit Operation Signal Input
7	SENS	Sensing Terminal	Constant Voltage Control Signal Input
8	DRIVE	Drive Terminal	Base Drive Current(ID) Output
9	VIN	VIN Terminal	Control Circuit Power Supply Input

3) Other Function

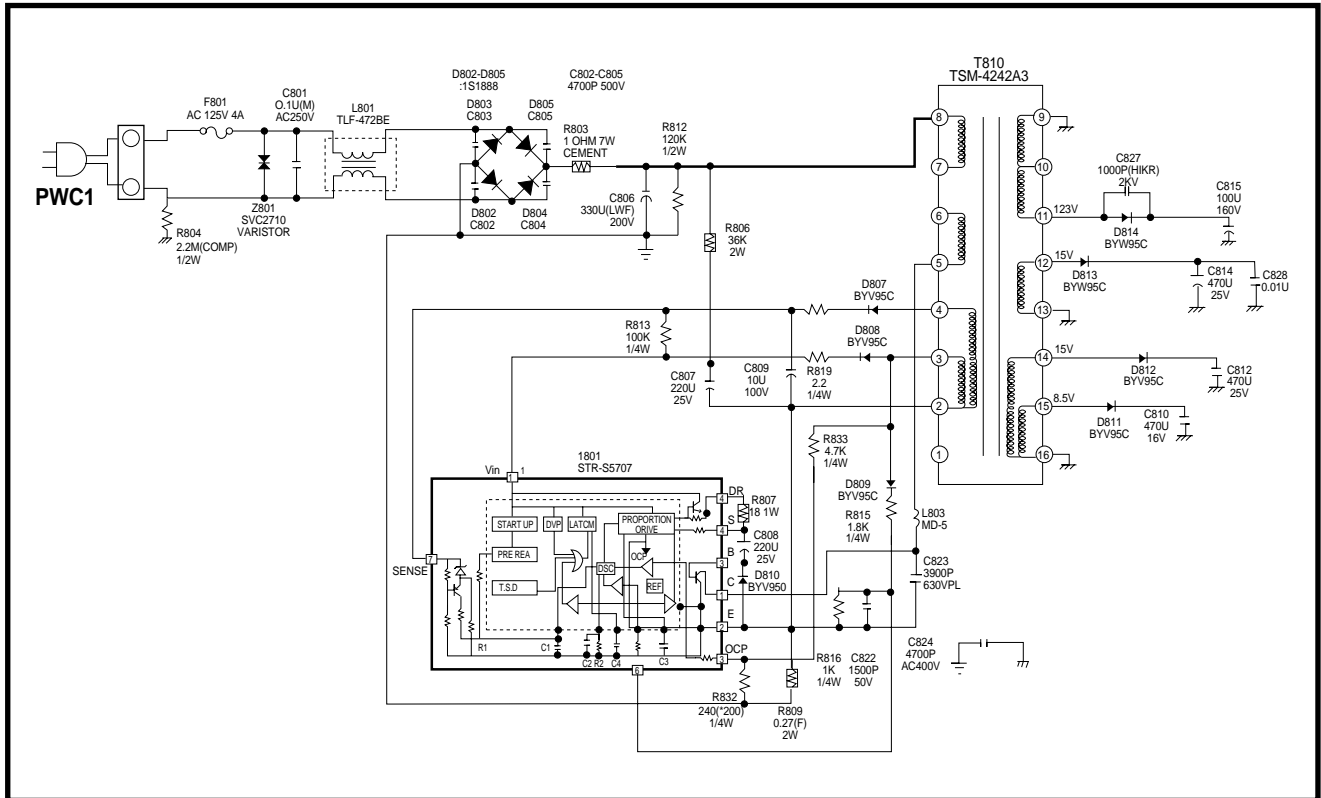
Symbol	Function
OVP	Built-in Overvoltage Protection circuit
TSD	Built-In Thermal Shutdown Circuit

4) Internal Circuit Constant

R1	T ON Adjustment Trimming Resistor	R7	14K Ω	C4	0.01 μ F
R2	T OFF Adjustment Trimming Resistor	R8	2.5K	C5	1500pF
R3	1.0k Ω	R9	35k Ω		
R4	100 Ω	C1	3300pF		
R5	85 Ω	C2	0.01 μ F		
R6	Vs Adjustment Trimming Resistor	C3	820pF		

2-3. SMPS BASIC OPERATING DESCRIPTION

1) Power supply block circuit



2) Initially starting operation

- When AC power supply is put in at first, the voltage which rectifies this happens on the both Blocks of C806. This voltage flows through R806 and is the circuit which searches the voltage of I801 V_{in} TERMINAL (PIN No.#9) and starts or stops operating I801.
- Turning on the power supply, CTRL circuit starts operating by the function of START circuit, when it is charged to C807 through starting resistance R806 and V_{in} terminal voltage goes to 8V (TYP.).
- According to the multiplication (PRODUCT) of starting resistance R806 and C807, time is decided which CTRL circuit starts operating after putting AC input voltage. So, if the value of C807 is too high, it could be late for I801 to start.
- When CTRL circuit starts operating and the voltage of DRIVE wound wire (pin no #3) of T801 TRANS is up, I801 starts operating after rectification of D808 and C807.
- When the voltage of detect wound wire (pin no #4) T801 TRANS increases and is rectified through D807 and C809 and DC 32V is put in I801 sense (pin no #7), TRANS secondary voltage is established.
- When MAIN TR of power IC is off, energy which is charged to the primary is transmitted through TRANS secondary rectification DIODE.

3. DEFLECTION CIRCUIT

Vertical, Horizontal drive pulses are out of M52335ASP(I501). This vertical drive pulses are connected to Vertical Drive IC TA8445K(I301) and drive vertical deflection coils. This horizontal deflection drive pulses by driving horizontal output circuits drive horizontal deflection coils and supply 26.5v, 180v, high voltage 25kV, focus voltage and screen voltage by driving FBT.

4. u-COM CIRCUITS.

Timer IC is M37267MX(I701) made by Mitsubish. Syscon receives the signal from user's remocon and it becomes to be serial-communication CLOCK/S DATA IN/S DATA OUT signal. Timer IC selects channel with CLOCL /DATA /EN and receives the functions to control TV and VCR drivings(OSD, VOL CTRL, TV ON/OFF), such as brightness, contrast, color, tint, sharpness, video signal, volume, caption and program recording.

5. CHANNEL SELECTION AND MEMORY

Selecting operation chosen by user is made up when PLL DATA, PLL CLOCK, PLL ENABLE are put out from u-com and is put in to Tuner. u-com put out data to memory IC 24LC01B(I702) to memorize final channel, volume condition, video condition, memorized channel.

6. SERVO/SYSCON CIRCUIT OPERATION

1) summary

- When power supply is supplied to TV/VCR, Servo-Syscon 1 Chip IC confirms the driving condition of DECK by checking CAM SW from DECK. And it gets capstan Motor worked and is operated as initial Mode. This is ready for receiving the serial data from timer IC after proper operating according to the driving condition of Deck and the existence of tape or not.
- When Syscon IC received recording signal, playback signal and so on by receiving of pushing button and using remote control inform Timer IC what button (remote sensor) is pressed as a serial data, Timer IC operates properly on each mode.
- After making Deck be in proper condition in each mode by driving L/C motor according to each mode, it drives the drum motor and capstan motor to make the head spin and the tape move. Drum and capstan servo are operated in order to obtain clear screen condition.
- The special feature of Drum servo system helps to keep the constant speed and phase of it and to prevent the screen sway up/down.
By comparing with D-FG signal from Drum Motor and reference signal of Syscon IC to keep the constant speed, the difference value is put out to DPWM to drive Drum Motor.
By comparing with D-PG signal from Drum Motor and reference signal of Syscon IC (playback Mode) to keep the constant phase, the difference value and speed difference are put out to D-PWM.
- Capstan servo system keeps the constant speed and phase of tape. It prevents the trembling sound and the flow of the Noise band on screen. And it prevents a lot of Noise on screen by malfunction of Tracking.
- In order to keep the constant speed, It's put out to C-PWM from caption Motor, DC-amplified in power circuit and gets caption Motor driven.
- By comparing with CTL signal from CTL Head connected with the lower section of A/C Head and the reference signal of Syscon IC, the value and speed difference are put out to C-PWM.

2) VCR MODE IN NORMAL CONDITION

- (1) EJECT : MODE that a cassette come out of compartment.
- (2) STAND-BY : MODE that a cassette is unloading.
- (3) STOP : MODE that a cassette is loading.
- (4) FF : Fast Forward MODE that moves the tape forward in STOP mode
- (5) REW : REWind MODE that moves the tape reversely in STOP mode
- (6) REC : RECOrd MODE that records video and audio signal on tapes.
- (7) PAUSE : record PAUSE MODE that makes recording stop.
- (8) PLAY : MODE that plays the record tape
- (9) STILL : play STILL MODE that playback is paused
- (10) CUE & REV : MODE that search the screen right or reversely.

7. NORMAL AUDIO CIRCUIT OPERATION

1. REC Mode

The signal put in to IU01 #16, is amplified at LINE AMP through ALC circuit in the IC. It is put out to speaker through #22. At the same time it is put out from #21 through High-Frequency compensation circuit by resonance block.

After the signal goes through the REC AMP, it's modulated to AM by frequency 70KHz, is recorded on a tape through R/P Head.

2. PB Mode

After the signal picked up at the HEAD is put in to pin #2 and performs to amplify and equalize frequency at each mode, it is supplied to OUTPUT #1 SW in IC.

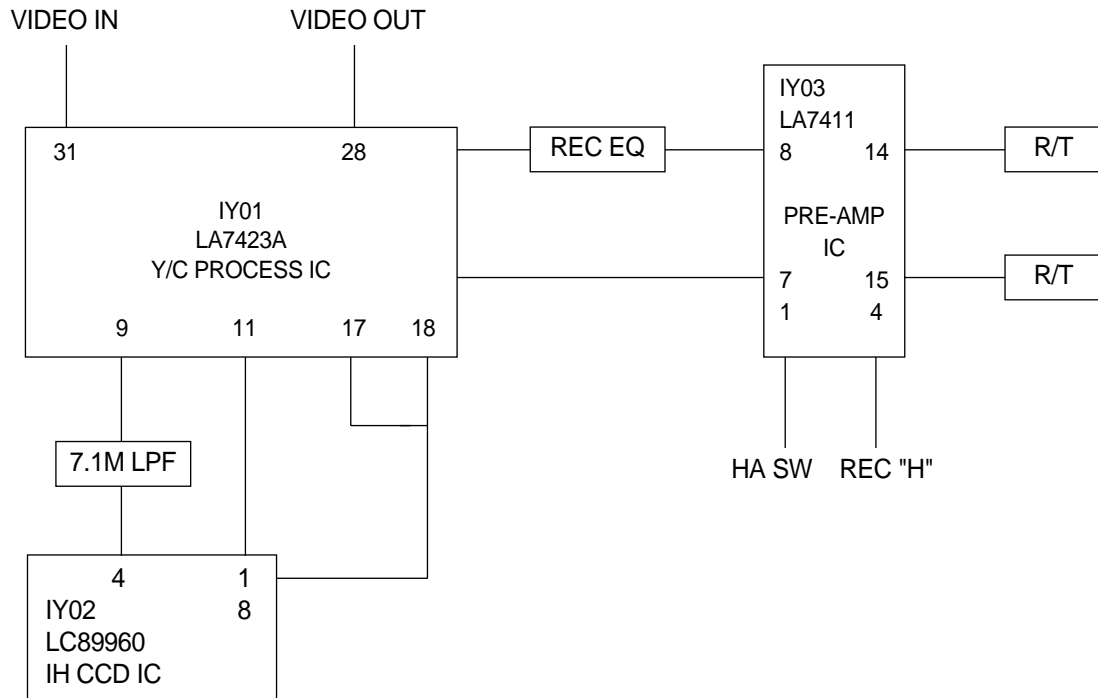
The signal is chosen as normal by Sound Output control, is put in to LINE AMP again and is amplified. Then, it's put in to TV.

8. VIDEO CIRCUIT OPERATION

1. EE mode

VIDEO input signal is input to #31 of IY01 (LA7423A) and output to #28 of IY01 after it's multiplied 2 times at AGC and VIDEO AMP. The signal is connected to VIDEO output terminal.

2. REC mode



- Signal is put in to #31 of IY01(LA7423A), and it is separated into Luminance and Chroma within IC. FM modulated luminance signal is put in to #34 and low-frequency transformed color signal is put in to #14. After passing through REC EQ, circuit for adjusting REC characteristics, FM modulated signal is put in to IY03(LA7411)#8 and color signal put out to #11 is put in to IY03 #3.
- The signal put in to #7, #8 of IY03(LA7411) is recorded on the tape by HEAD through AGC and REC CURRENT AMP.

3. PB Mode

- In case of SP, the signals on #17, #20 of IY03(LA7411) are amplified to 60dB respectively by V.SW, put out to #7 IY03 and put in to #4 IY01(LA7423A)
 - FM signal put in to #14 of IY01 is demodulated at FM DEMODULATOR after passing through FM EQ. within IC and put in to Y/C MIXER after passing through 3.0MHz LPF to eliminate color signal component.
 - While FM signal put in to #14 of IY01 is passing through 1.3MHz LPF. Only low-frequency transformed color signal passes.
- The color signal is converted to 3.58MHz at Main CONVERTER and is put in to Y/C MIXER after it's amplified to 6dB and goes through ACC/BURST EMPHASIS. Y/C signal is put out to #28.

IMPORTANT IC'S OPERATION

IY03 (LA7411)

1. Case Outline : DIP-24S (300mil) Plastic Package
2. Application : VHS format VTR Record and Playback Head Amplifiers
3. Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	VCC max		7.0	V
Allowable power dissipation	Pd max	Ta 6.5°C	700	mW
Operating temperature	Topg		-10 to +65	°C
Storage temperature	Tstg		-40 to +150	°C

4. Operating conditions at Ta = 25°C

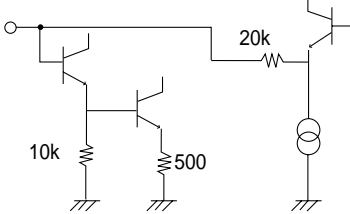
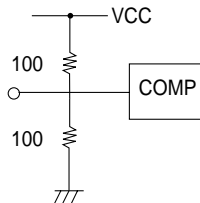
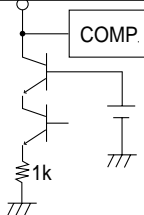
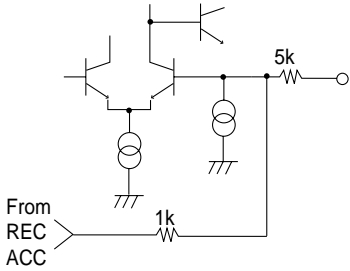
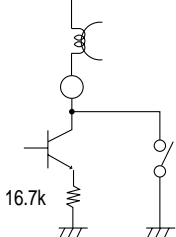
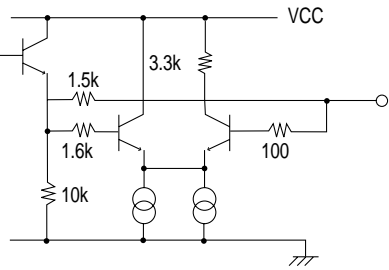
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	VC		5.0	V
Operating supply voltage range	VCC opg		4.80 to 5.50	V

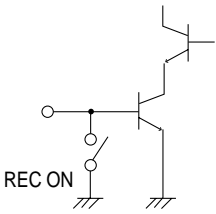
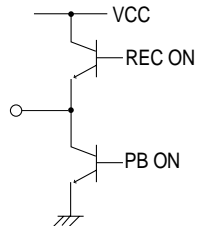
5. Electrical Characteristics at Ta = 25°C

Parameter		Symbol	In-put	Out-put	Conditions			min	typ	max	Unit
						T1	T2				
PB mode					T12:5.0V T10:OPEN T4:OPEN (PB)	EP/ SP	SW30 MUTE				
Current dissipation		I CCP			The current flowing into pins 12		0	14	18	22	mA
Voltage gain L H	CH1	GVP 1	T17A	T7A	Vi = 38mVpp. f = 1MHz		0	56.5	59.5	62.5	dB
	CH2	GVP 2	T20A				2.5				
Voltage gain difference		GVP 1			GVP1-GVP2			-1	0	1	dB
Input conversion noise distortion	CH1	VNIN 1	T17A	T7A	VOUT/GVP1.2 after 1.1MHz LPF		0		1.1	1.5	µVrms
	CH2	VNIN2	T20A				2.5				
Frequency characteristics	CH1	V fp 1	T17A	T7A	Vi=38mVpp. f=7MHz V OUT/GVP1.2 output ratio		0	-2.5	1		dB
	CH2	Vfp 2	T20A				2.5				
Second harmonic distortion	CH1	V HDP 1	T17A	T7A	Vi=38mVpp. f=4MHz (8M component)/ (4M component) Vi=38mVpp output ratio		0		-40	-35	dB
	CH2	VHDP 2	T20A				2.5				
Maximum output level	CH1	V OMP 1	T17A	T7A	f=1MHz The output level when the third harmoinic is-30dB.		0	1.0	1.2		Vpp
	CH2	V OMP 2	T20A				2.5				

6. Pin Function Table

No	Pin-function	Type DC voltage(V)		Input/Output configuration	Remarks				
1	HA (EP/SP)				1.6V <table><tr><td>EP</td></tr><tr><td>SP</td></tr></table>	EP	SP		
EP									
SP									
2	RF-SW (REC-MUTE)				SW30 REC MUTE 1.0V <table><tr><td>HCH</td><td>ON</td></tr><tr><td>LCH</td><td>OFF</td></tr></table> 3.2V	HCH	ON	LCH	OFF
HCH	ON								
LCH	OFF								
3	H-SYNC				1.5V <table><tr><td>Syac</td></tr><tr><td>H</td></tr><tr><td>L</td></tr></table>	Syac	H	L	
Syac									
H									
L									
4	REC-H	PB	O		2.0V <table><tr><td>REC</td></tr><tr><td>PB</td></tr></table>	REC	PB		
REC									
PB									
		REC	5						
5	ENV DET OUT	PB	See attached sheet						
		REC	0						
6 22	GND								
7	PB-OUT	PB	2.3						
	REC-C-IN	REC	3.6						
8	REC-Y-IN								
		REC	3.6						

No	Pin-function	Type DC voltage(V)		Input/Output configuration	Remarks
9	AGC-FLT	PB	0		
		REC	1.6		
10	REC-CUR ADJ2	PB	2.5		4V : +3.5dB 2.5V : ± 0 dB (OPEN) 1V : -6dB
		REC	2.5		
11	REC-CUR ADJ1	PB	4.5		
		REC	5.0		
12	VCC				
13	REC-BIAS	PB	0		
		REC	1.7		
14	REC-OUT	PB	0		
		REC	4.2		
16 19	PB Amp 2'nd Filt	PB	2.0		
		REC	3.6		

No	Pin-function	Type DC voltage(V)		Input/Output configuration	Remarks
17 20	PB-L-IN -H-IN	PB	0.7		
		REC	0		
18 21	PB-L-SW -H-SW	PB	0		ON resistance 4 to 6Ω
		REC	4.2		
15 23 24	NC				

7. Pin Operation

VIDEO PREAMP IC LA7411

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	0	0	0	0	0	0	0
2	0	0	0	0	1.4	1.4	1.4
3	0	0	0	0	0	0	0
4	0	5.2	0	0	0.5	0	0
5	0.9	0	0.9	2.4	2.5	1.6	2.1
6	0	0	0	0	0	0	0
7	2.3	3.5	2.3	2.3	2.3	2.3	2.3
8	0	0	0	0	0	0	0
9	0	1.6	0	0	0	0	0
10	2.6	2.6	2.6	2.6	2.6	2.6	2.6
11	5.1	4.3	5.1	5.2	5.2	5.2	5.2
12	5.1	5.2	5.1	5.2	5.2	5.2	5.2
13	0	1.7	0	0	0	0	0
14	0	4.2	0	0	0	0	0
15	5.2	5.2	5.2	5.2	5.2	5.2	5.2
16	2.1	3.8	2.1	2.1	2.1	2	2.1
17	0.7	0.7	0.7	0.7	0.7	0.7	0.7
18	0	4.2	0	0	0	0	0
19	2.1	3.8	2.1	2.1	2.1	2.1	2.1
20	0.7	0.9	0.7	0.7	0.7	0.7	0.7
21	0	4.2	0	0	0	0	0
22	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0

IY02 (LC89960)

1. Overview

The SANYO LC89960 is a 1H delay line for NTSC television systems.
Only an external low-pass filter is required to implement a 1H delay line.

2. Features

- Single 5V power supply.
- 1H delay signal can be obtained with low-pass filter and 3.58MHz clock input.
- Minimum number of external components required because of timing generator, bias generator, output Amp, on chipped.
- The phase of output signal is reversed to the phase of input signal.

3. Functions.

- 905 stage CCD shift register.
- Timing generator and clock driver for CCD.
- Auto-bias circuit.
- Sync tip clamp circuit.
- Sample and hold circuit and output Amp.
- 4fsc clock generator with PLL circuit.
- VCO (4fsc) output circuit.

4. Absolute Maximum Ratings

Items	Symbol	Unit	Min.	max.	Conditions
supply voltage	VDD	V	-0.3	+6.0	Ta = 25°C
Operating Temperature	TOPR	°C	-10	+60	
Storage Temperature	TSTG	°C	-55	+150	
Allowable Power : Dissipation	PD	mW	-	450	Ta = 25°C

5.Pin Operation

Y/C CCD IC LC89960

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	2.2	2.2	2.2	2.2	2.2	2.2	2.2
2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
3	0	0	0	0	0	0	0
4	2	2	2	2	2	2	2
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9	5.2	5.2	5.2	5.2	5.2	5.2	5.2
10	2.1	2.1	2.1	2.1	2.1	2.1	2.1
11	2.1	2.1	2.1	2.1	2.1	2.1	2.1
12	5.2	5.2	5.2	5.2	5.2	5.2	5.2
13	9.4	9.4	9.4	9.4	9.4	9.4	9.4
14	0	0	0	0	0	0	0

IY01 (LA7423A)

1. Case Outline : DIP-36S(400mil) Plastic Package
2. Application : VHS VTR Video signal Processor (Y/C single-chip)
3. Maximum Ratings at Ta = 25°C

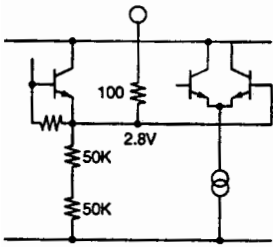
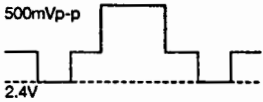
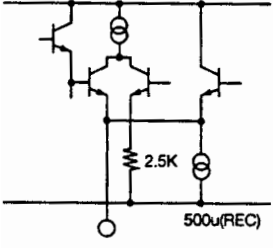
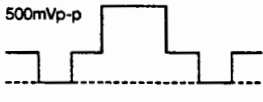
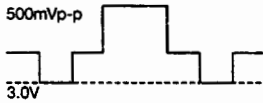
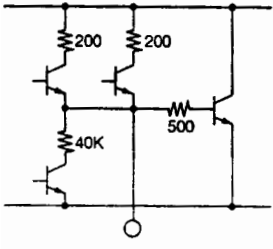
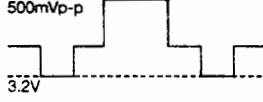
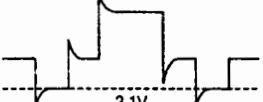
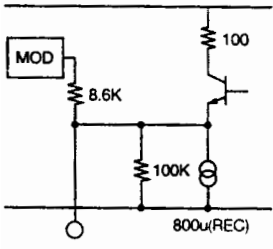
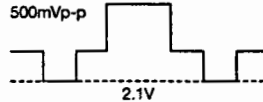
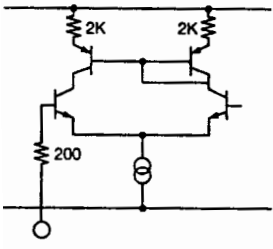
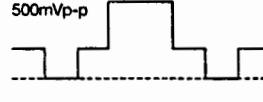
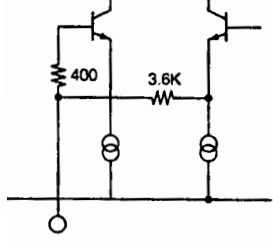
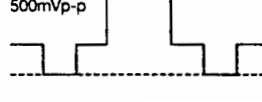
Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	VCC max		7.0	V
Allowable power dissipation	Pd max	Ta 65°C	1070	mW
Operating temperature	Topg		-10 to + 65	°C
Storage temperature	Tstg		-40 to + 150	°C

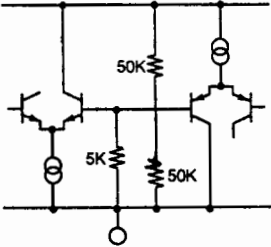
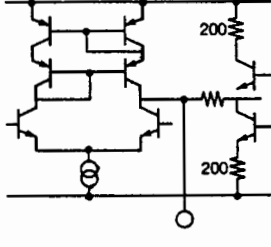
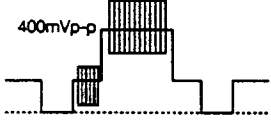
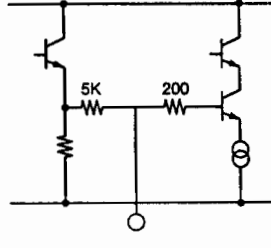
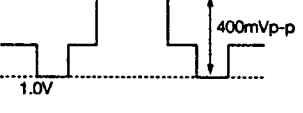
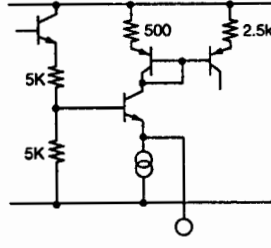
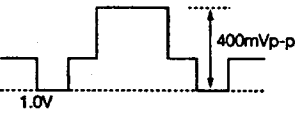
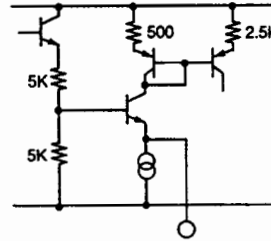
4. Pin Operation

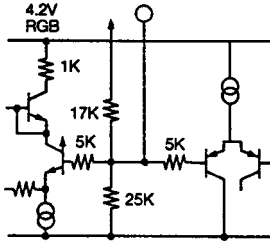
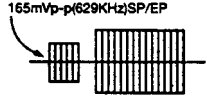
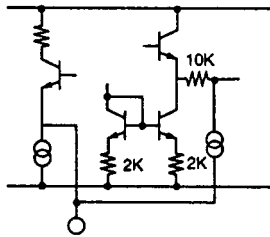
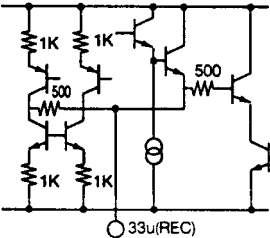
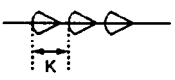
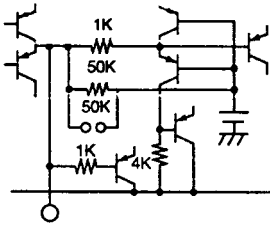


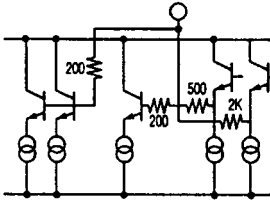


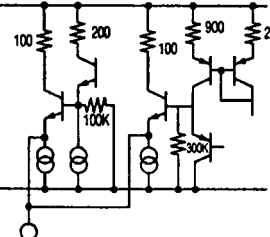
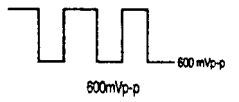
Y/C 1CHIP IC LA 7423

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	0	0	4.8	0	4.8	0	4.8
2	2.4	2.4	1.9	2.4	2	2.4	2
3	3	3	3.2	3	3.1	3	3.1
4	2.3	2.3	4.7	2.3	4.7	2.3	4.7
5	2.3	2.3	4.7	2.3	4.7	2.3	4.7
6	3.1	3.1	3	3.1	3	3.1	3
7	0	0	3.6	1.8	3.6	1.8	3.6
8	3.1	3.1	3.1	3.1	3.1	3.1	3.1
9	2.1	2.1	2.1	2.1	2.1	2.1	2.1
10	0	0	0	0	0	0	0
11	1.1	1.1	1.1	1.1	1.1	1.1	1.1
12	2.5	2.5	2.5	2.5	2.5	2.5	2.5
13	2.5	2.5	2.5	2.6	2.5	2.6	2.5
14	2.5	2.5	3.3	2.5	3.3	2.5	3.3
15	2.1	2.1	2.1	2.3	2.1	2.3	2.1
16	2.1	2.1	2.1	2.1	4.6	2	5
17	3.9	3.9	3.8	3.9	3.8	3.9	3.8
18	2.8	2.8	2.7	2.8	2.7	2.8	2.7
19	2.7	2.7	2.7	2.7	2.7	2.7	2.7
20	2.7	2.7	2.7	2.7	2.7	2.7	2.7
21	1.9	1.9	1.9	1.9	1.9	1.9	1.9
22	2	2	2	2	2	2	2
23	1.6	1.6	1.6	1.6	1.6	1.6	1.6
24	5.1	5.1	5.1	5.1	5.1	5.1	5.1
25	4.2	4.2	4.2	4.2	4.2	4.2	4.2
26	0	0	0	0	0	0	0
27	5.1	5.1	5.1	5.1	5	5.1	5
28	1.8	1.8	1.8	1.8	1.7	1.8	1.8
29	0	0	0	0	0	0	0
30	2.7	2.7	2.7	2.7	2.7	2.7	2.7
31	3	3	3.5	3	3.5	3	3.5
32	1.5	1.5	1.8	1.5	1.7	1.5	1.6
33	0	0	0	0	0	0	0
34	3.1	3.1	3.7	3.1	4.6	3.1	4.6
35	0	0	3.6	0	3.6	0	3.6
36	5.2	5.2	3.7	5.2	3.7	5.2	3.7

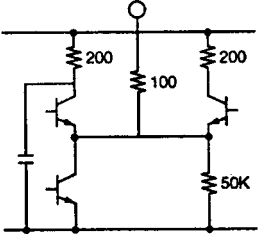

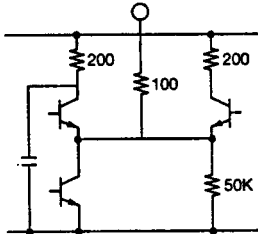

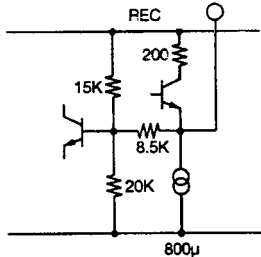
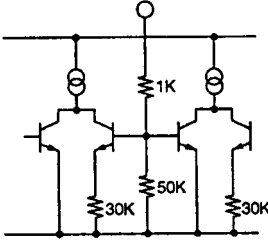
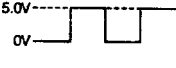
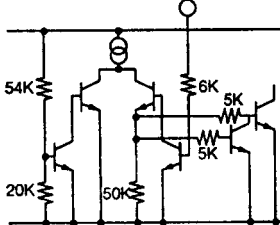
5. IY01 (LA7423A : Y/C PROCESS IC)

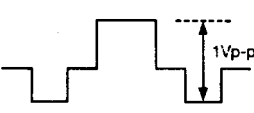
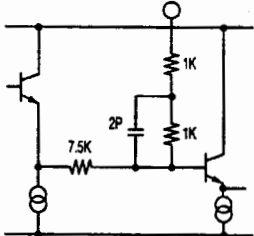
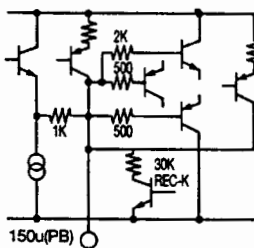
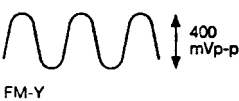
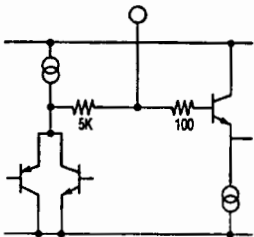
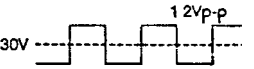
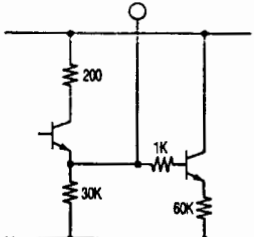

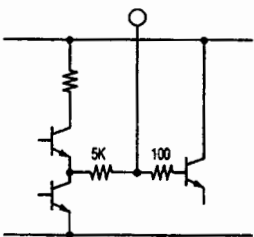

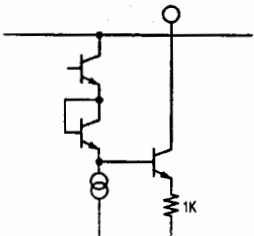
No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
1	SYNC-DET -OUT		DC		
	S-DET-OUT				
2	REC-Y	REC = 2.4V			
	MADE. DE. EMPH-OUT	PB = 2.0V			
3	CLAMP	REC = 3.0V			
		PB = 3.2V			
4	EMPH-OUT	REC = 2.1V			
	R/P CTL	PB = 4.4V			
5	MAIN-EMPH -FILT	REC = 2.1V			
		PB = 4.4V			
6	NL FILT	REC = 3V			
		PB = 3V			

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
7	MODE-CTL		SP 0~1.5 [V] LP 1.5~3.2 [V] EP 3.2~5.0 [V]		
8	VCA-FILT	REC = 3V	DC		
		PB = 3V			
9	VCA-IN	REC = 2.2V			
		PB = 2.2V			
10	GND	0V			
11	CCD DRIVE	REC = 1.0V			
		PB = 1.0V			
12	PIC-CTL	REC = 3V	SOFT : 2.0~2.5V HARD : 2.6V~3.2V		
	EDIT	PB = 3V	EDIT when over 3.5V		

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
13	NC-CTL	REC = 2.5V	under 1.5V N.C OFF 2.0~3.0V N.C CTL over 3.8V Y/CMix OFF (N.C. Center)		
		PB = 2.5V			
14	REC C-OUR	REC = 2.4V			
	PB-YC-IN	PB = 3.2V	Y-FM +Low Chroma		
15	AGC-TC 1	REC = 2.4V			
	BALANCER	PB = 2.3V			
16	REC-APC-FILT	REC = 2.3V			
	TRICK-H	PB = over 3.5V (SP Mode)			
17	VXO-IN	REC = 3.8V			
		PB = 3.8V			
18	XO-OUT	REC = 2.3V			
		PB = 2.4V			

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
19	SLD-FILT	REC = 2.8V			
		PB = 2.8V			
20	AFC/APC FILT	REC =2.8V			
		PB = 2.8V			
21	C-OUT	REC = 1.9V XO mode when over 3.5V			
		PB = 1.9V ANR ON when over 3.5V			
22	KILL-FILT	Color = 1.9V			
		Killer = 3.1V			
23	CNR-CD-IN	REC = 1.7V			
		PB = 1.7V CNR OFF when over 2.5V			
24	VCC-2	5.0V	D.C		

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
25	REG = 4.2	4.2V	D.C		
26	SYNC OUT				
		1.75V when CNR mode			
27	VCC-1				
28	VIDEO OUT				
29	QV. QH INS. CHARA INS				
30	ROT-PLS				

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
31	VIDEO-IN	REC = 2.7V			
		PB = 2.7V			
32	AGC-TC2	REC = 1.6V			
		PB = 1.6V			
33	SVHS-FM-IN	REC = 0V			
		PB = 3.7V Normal VHS 0V			
34	MOD-OUT	REC = 3.0V			
	DOC-STOP-H	PB = 3.6V			
35	NOR-FM-IN	REC = 0V			
		PB = 3.8V			
36	FM-EQ-OUT	REC = 1V			
		PB = 3.8V			

IU01 (BA7790LS)

1. FUNCTION

- (1) Circuit essential for a standard sound signal processing system as a PB AMP, REC AMP, ALC circuit, EQ selecting switch and high voltage head switch have been intergrated onto a single 1 chip.
- (2) Built-in LINE/TUNER INPUT selecting switch.
- (3) Built-in summary 3 mode EQ switch and it can be obtained EQ carateristics of each mode.
- (4) PB AMP is low noise and high performance.
- (5) Built-in ALC circuit with variable ALC level for setting.
- (6) No shock noise or ALC attack noise is generated when power source is turned ON or the mode is changed by means of a ALC loop outside mute system.

2. Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	Vcc	13	V
Power dissipation	Pd	400	mW
Operating temperature	Topr	-10~+65	°C
Storage temperature	Tstg	-55~+125	°C

Derate 4.0mW/°C for the operating above Ta = 25°C

3. Recommended Operational Conditions (Ta = 25°C)

Parameter	Symbol	Range	Unit
Power supply voltage	Vcc	7.5~12.5	V

4. Pin Opertion

AUDIO IC BA7790LS

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	0	0	0	0	0	0	0
2	4.6	4.6	4.6	4.6	4.6	4.6	4.6
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	11.2	11.2	11.2	11.2	11.2	11.2	11.2
6	4.7	4.7	4.7	4.7	4.7	4.7	4.7
7	11.4	11.4	11.4	11.4	11.4	11.4	11.4
8	4.7	4.7	4.7	4.7	4.7	4.7	4.7
9	0	0	3.8	0	3.7	0	0
10	4.7	4.7	4.7	4.7	4.7	4.7	4.7
11	0.6	0.6	5.2	0.6	5.2	0.6	5.2
12	5.3	5.3	5.3	5.3	5.3	5.3	5.3
13	4.6	4.6	4.6	4.6	4.6	4.6	4.6
14	0.6	0.6	0	0.5	0	0.5	0
15	5.4	5.4	5.3	5.4	5.3	5.4	5.4
16	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17	0	0	0	0	5	0	5
18	5.3	5.3	5.3	5.3	5.3	5.3	5.3
19	5.4	5.4	5.3	5.3	5.4	5.4	5.4
20	0	0	0	0	0	0	0
21	5.4	5.4	5.3	5.4	5.4	5.4	5.4
22	5.4	5.4	5.3	5.4	5.4	5.3	5.3
23	0	0	0	1	0	0	0
24	0.5	5.2	0.5	0.5	0	0.5	0.5

5. Terminal Function Table

Terminal No.	Description	Function	Terminal Voltage	Terminal Form
1	HEAD EQ	Selecting switch of condenser for head resonance	0.0V	220k Ω /27 Ω (ON)
2	PB IN	PB AMP input/PB side head switch	3.4V	REC : 120k Ω REC : 11 Ω (ON)
3	REC HSW	REC side high voltage head switch	0.0V	REC : 11 Ω (ON) REC : OPEN
4	GND	GND (for PB AMP, Head switch)	0.0V	–
5	RIPPLE FILTER	Ripple filter	9.0V	10k Ω (Vcc)
6	PB NFB	PB AMP feedback	3.5V	B(NPN)
7	Vcc	Vcc	9.0V	–
8	PB EQ	PB EQ selecting switch	3.5V	55 Ω (ON)/OPEN
9	EQ CTRL	EQ control	–	
10	PB OUT	EQ AMP output	3.5V	EE
11	PB/TU/EE CTRL	PB/TU/EE control	–	
12	PB LINE IN	Line input for PB	4.1V	120k Ω
13	ALC LEVEL	ALC Level setting terminal	–	B(PNP)
14	ALC FILTER	Terminal for ALC filter with time constant (Setting attack and recovery time)	PB : 0.0V PB : variable	EE(NPN)~220 Ω
15	BIAS	Bias	4.1V	EE(NPN) Isink = 670 μ A
16	LINE IN	Line input	4.1V	120k Ω
17	MUTE CTRL	MUTE control	–	
18	TUNER IN	Tuner input	4.1V	120k Ω
19	REC NFB	REC AMP feedback	4.1V	B(NPN)
20	GND	GND	0.0V	–
21	REC OUT	REC AMP output	4.1V	EE(P-P)
22	BF OUT	Line AMP OUTPUT	4.1V	EE(P-P)
23	REC EQ	REC EQ selecting switch	0.0V	100k Ω /22 Ω (ON)
24	REC/EE CTRL	REC/EE control	–	

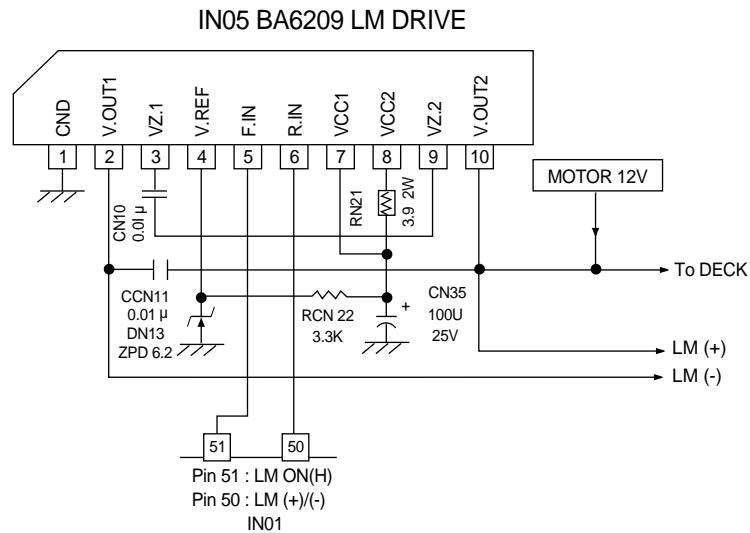
NOTE :

- Terminal form abbreviations : EE : emitter follower, P-P : push pull, B : base, C : collector.
- All figures are measured at Vcc = 9V at no signal condition.
- All figures show standard values.

IN05(BA6209)

1. Function : Reversible Motor Driver

2. Pin Operation



IN03 (MC4558C)

1. Function : Dual wideband operational amplifier

2. Pin Operation

DUAL OP AMP MC4558C

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	3.2	3	3.3	3.3	3.3	3.2	3.4
2	3.1	3	3.2	3.2	3.2	3.2	3.2
3	3.1	3	3.2	3.2	3.2	3.3	3.3
4	0	0	0	0	0	0	0
5	2.8	2.7	3.3	3.3	3.3	3.6	3.6
6	0.9	0.9	3.2	3.2	3.2	3.3	3.3
7	1.4	1.4	3.7	3.7	3.7	5.3	5.3
8	6	6	6	6	6	6	6

I503(TC4066BP)

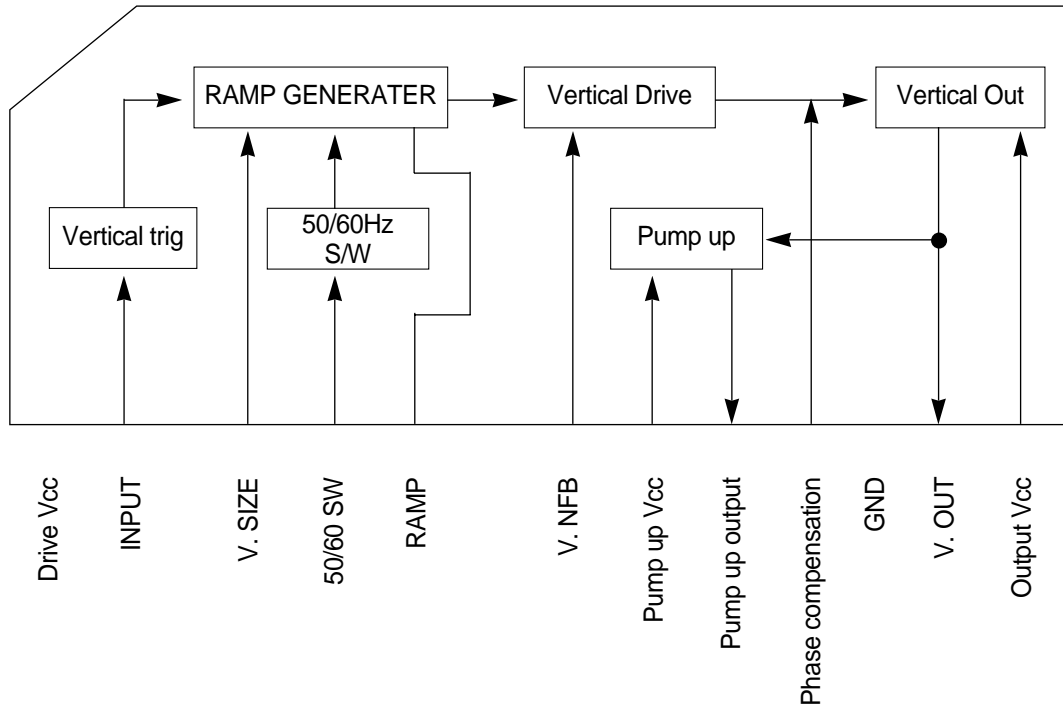
1. Four independent circuits of bidirectional switches

2. Pin operation

SWITCHNG IC TC4066BP

PIN \ MODE	STOP	REC	PLAY	PIN \ MODE	STOP	REC	PLAY
1	6	6	6	8	0	0	0
2	5.3	0	5.3	9	5.7	0	0
3	0	0	0	10	0	5.7	0
4	0	0	0	11	3.8	3.7	4
5	3.5	0	0	12	2.3	3.8	2.6
6	3.5	0	0	13	2.3	3.8	2.6
7	3.6	4.2	4.1	14	2.3	2.6	2.6

I301(TA8445K)



1. Operating Conclitions (Ta = 25°C)

Item	Symbol	Min	Typ.	Max.	Unit
Drive vcc	VCC1	8.1	9.0	9.9	V
Pump up Vcc	VCC2	–	2.4	2.9	V
Vertical Output Vcc	I ₁₁ P-P	–	–	2.2	Ap-p

2. Operating Characteristics (Ta = 25°C, Vcc1 = 9V, Vcc2 = 24V)

Item	Symbol	Measurement Condition	Min	Typ.	Max.	Unit
Drive current	I _{cc1}	1	2.0	5.0	12	mA
Trig input threshold Voltage	V ₂	2	–	–	1.0	V
Vertical range control voltage (1)	V _{60/3}	3	1.0	1.5	2.0	V
Vertical range control voltage (2)	V _{50/3}	11	0.75	1.25	1.75	V
Maximum output voltage	V ₅	4	3.5	4.8	6.0	V
Macimum peak to peak Voltage	V _{5P-P}	4	3.5	4.5	5.5	V _{P-P}
Output transistor saturation Voltage(1)	V _{S11-10}	5	0.3	0.5	1.0	V
Output transistor saturation Voltage(2)	V _{S12-11}	6	1.0	1.8	3.6	V
Pump up output Voltage (1)	V _{S7-8}	7	1.0	2.0	3.0	V
Pump up output Voltage (2)	V _{S8-10}	8	0.2	0.8	1.6	V
No signal Current	I _b	9	–	2.6	–	mA
Center Voltage	V _{CENTER}	10	8.0	12.0	14.0	V

IN01 (Syscon : TMP91C642AN-3178)

SYSCON IN01

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	5.2	5.2	5.2	5.1	5.1	5.1	5.1
2	3.5	3.4	3.8	3.5	3.6	3.6	3.7
3	4.6	4.6	4.6	4.6	4.6	4.6	4.6
4	5.2	5.2	5.2	5.2	5.2	5.2	5.2
5	0	0	0	0	0	0	0
6	5.2	5.2	5.2	5.2	5.2	5.2	5.2
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	3.6	3.1	3.3	3.3	3.3	2.8	3.6
10	2.8	2.8	2.8	2.8	2.8	2.8	0
11	5.2	0	0	0	5.2	5.2	0
12	0	0	0	0	0	0	0
13	5.2	5.2	5.2	5.2	5.2	5.2	5.2
14	0	var	var	var	var	5	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	5	2.6	2.5	2.5	2.6	2.6	2.6
18	0	4.8	4.8	4.8	4.8	4.8	4.8
19	0	2.7	2.7	2.7	2.7	2.7	2.7
20	4.7	3.2	3.2	3.2	3.2	4.7	4.7
21	5.2	5.2	5.3	5.3	5.3	5.3	5.3
22	0	0	0	0	0	0	0
23	0	2.6	2.6	2.6	2.6	2.6	2.6
24	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0
26	4.5	var	3.9	3.8	3.8	0	3.8
27	3.7	3.7	4.2	3.8	3.8	3.8	3.8
28	3.7	3.7	4.2	3.7	3.7	3.7	3.7
29	0	0	4.7	0	4.7	0	4.7
30	2.4	2.4	2.5	2.4	2.5	2.4	2.5
31	0	2.8	2.8	2.8	2.8	0	5.2
32	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0
35	5.2	0	5.2	5.2	5.2	5.2	5.2
36	5.2	5.2	0	5.2	0	5.2	0
37	0	5.2	5.2	5.2	0	5.2	0
38	5.2	0	0	0	0	0	0
39	2.9	5.2	5.2	5.2	5.2	5.2	5.2
40	5.2	3.1	3	3	3	2.9	2.9
41	0	5.2	5.2	5.2	5.2	5.2	5.2
42	0	0	0	0	5.2	0	5.2
43	0	0	0	0	0	0	0
44	5.2	5.2	5.2	5.2	5.2	5.2	5.2
45	2.5	2.5	2.5	2.5	2.5	2.5	2.5

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
46	5.2	5.2	5.2	5.2	5.2	5.2	5.2
47	2.2	2.2	2.2	2.2	2.2	2.2	2.2
48	2.1	2.1	2.1	2.1	2.1	2.1	2.1
49	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0
54	2.1	3.5	3.5	3.5	2.1	3.5	3.5
55	2.6	2.6	2.6	2.1	5.2	2.6	2.6
56	5	5	5	5	5	5	5
57	5.2	5.2	5.2	5.2	5.2	5.2	5.2
58	5.3	5.3	5.3	5.3	5.3	5.3	5.3
59	3.1	3.1	3.1	3.1	3.1	3.1	3.1
60	0.6	0	2.9	2.1	2.4	1.8	2.1
61	5.3	5.3	5.3	5.3	5.3	5.3	5.3
62	5.3	5.3	5.3	5.3	5.3	5.3	5.3
63	0	0	0	0	0	0	0
64	5.3	5.3	5.3	5.3	5.3	5.3	5.3

PIN	PIN NAME	PIN DESCRIPTION
1	S/CLK	Serial Clock
2	S/OUT	Serial OUT, Contact with TIMER IC Serial IN
3	S/IN	Serial IN, Contact with TIMER IN Serial OUT
4	SYNC (L)	NOT USED
5	VCR/ON(L)	NOT USED
6	LINE/TV	NOT USED
7		NOT USED
8	C/SYNC	Composite Sync
9	SLOW STEP	Adjusting Vth of CTL/P, Set concerned area on 'L' when SLOW mode
10	C. I LIMITER	Limit the current of CAP. M/T Set on 'L' when SLOW MODE
11	CAP F/R	Switching foward(H)/reverse(L) of CAP. M/T
12	C/SYNC	Composite SYNC
13	REMOCON IN	REMOTE controller signal
14	REEL PULSE	Take Up Reel Pulse IN
15	STROBE	Port to have S.DATA with TUNER
16	RENTAL(H)	Set on 'H' when rental
17	D/FG	Drum FG
18	D/PG	Drum PG
19	C/FG	Caption FG
20	PB/CTL	Caption APC, SLOW & RTC & VISS DETECT
21	EVER 5.3V	EVER 5.3V
22	QV/SYNC	WHen special play, Quasi Vertical SYNC
23	V/SW	Video head Switching
24	A/SW	Audio head Switching
25	H. A. SW	Video head switching out, SP(L)
26	REC-LED(L)	Light up when REC
27	STAND-BY(L)	Light up when STAND-BY
28	T. REC	Lights up when timer recording stand-by and blinks when timer recording REPEAT

PIN	PIN NAME	PIN DESCRIPTION
29	AUDIO SLP(H)	Set 'H' When SLP mode.
30	D/PWM	Drum motor control PWM output *period of PWM : 23.4KHz (6MHz/256)
31	C/PWM	Capstan motor PWM output * period of PWM : 23.4KHz (6MHz/256)
32	GND(D)	Digital GND
33		NOT USED
34	CST IN(L)	NOT USED
35	REC(L)	Set 'L' when recording
36	EE(H)	Set 'H' when EE/REC mode with TIME delay, in case of VIDEO mode
37	TRICK (L)	Set 'L' when special play, Audio MUTE output
38	SP(L)	tape speed SP(L) output
39	LP(L)	tape speed LP(L) output
40	R/CTL	Change Record CTL DUTY when MARK & ERASE mode
41	2HD/4HD	4HD (L) OR 2HD (H)
42	A. MUTE (H)	Audio Mute output when special record
43	NTSC(L)	NTSC(L)/PAL(H) switching output
44	SP TRICK(L)	Set 'L' when SP mode
45	CLK	NOT USED
46	RESET(L)	RESET
47	OSC/IN	SYSTEM CLOCK CRYSTAL(10MHz)
48	OSC/OUT	SYSTEM COCK CRYSTAL (10MHz)
49	GND	
50	LM(+)/LM(-)	Loading motor foward(L), reverse(H)
51	LM ON(H)	Set 'H' when operates loading motor
52	T/START(L)	Tape START sensor input
53	T/END(L)	Tape END sensor input

PIN	PIN NAME	PIN	DISCRIPTION											
54	CAM A	CAM Detection input port												
55	CAM B													
	CAM C													
	CAM D													
									POWER	A	B	C	D	MODE
									2.9 ~ 3.7	L	H	H	H	EJECT 4.35(H)
									3.7 ~ 4.5	L	H	H	L	STAND-BY(INITIAL) 4.35(L)
									2.2 ~ 2.9	H	H	H	L	REV 5.30(L)
		2.9 ~ 3.7	H	H	L	L	STOP 2.65(L)							
		0.0 ~ 2.2	H	H	L	H	PLAY, QUE 2.65(H)							
		2.2 ~ 2.9	H	L	H	L	FF/REW 2.10(L)							
		4.5 ~ 5.0	H	H	H	H	CAM 5.0(H)							
56	KEY 1 &	VTR function key input												
57	KEY 2													
58	TRK DLY	PATH adjustment TRACKING DELAY												
59	PG DLY	PG DLY adjustment * PG DLY adjustment range 5.625 degree – 11.25 degree – 28.125 degree (0V) – (CENTER) – (5V)												
60	ENVE DET.	*Maximum POINT SEARCH DC ENVE input *AUTO TRACKING RESTART CONDITION. (SP : 2~5V, SPL, LP : 1.5`5V) • CASSETTE IN in play mode • when tape speed is changed, in play mode • PB/CTL PULSE off PB/CTL PULSE on												
61	SYSTEM SEL	NOT USED												
62	EVER 5.3V	EVER 5.3V												
63	GND(A)	Analogue GND												
64	EVER 5.3V	EVER 5.3V												

I701(Timer : M37267M6 - 101SP)

1. Pin Layout

M37267M6 - 101SP

HSYNC INPUT →	1	HSYNC	P52/R	52	→ R OUT
VSYNC INPUT →	2	VSYNC	P53/G	51	→ G OUT
AFT INPUT →	3	P40/MXR/AD4	P54/B	50	→ B OUT
N. C.	4	P41/INT2/MXG	P55/OUT1	49	→ BLINKING OUTPUT
SYNC DETECT INPUT →	5	P42/TIM2/MXB	P04/PWMO	48	→ CONTRAST PWM OUTPUT
N. C.	6	P43/TIM3/MXOUT	P05/PWM1	47	→ BRIGHT PWM OUTPUT
N. C.	7	P24/AD3	P06/PWM2	46	→ SHARPNESS PWM OUTPUT
N. C.	8	P25/AD2	P07/PWM3	45	→ VOLUME PWM OUTPUT
MONITOR POWER ON(L) OUTPUT ←	9	P26/AD1	P20	44	→ AUDIO MUTE (H) OUTPUT
SERIAL STROBE OUTPUT ←	10	P27	P21	43	→ VIDEO MUTE (H) OUTPUT
TINT PWM OUTPUT ←	11	P00/PWM4	P22	42	→ TV(L)/AV/(H) OUTPUT
COLOT PWM OUTPUT ←	12	P001PWM5	P23	41	→ VER SW OUTPUT
PLL STROBE OUTPUT ←	13	P02/PWM6	P10/OUT2	40	N. C.
SERIAL DATA OUTPUT →	14	P17/SIN	P11/SCL1	39	→ EEPROM CLOCK OUTPUT
POWER FALL OUTPUT →	15	P44/INT1	P12/SCL2	38	N. C.
SERIAL/PLL DATA OUTPUT ←	16	P45/SOUT	P13/SDA1	37	↔ EEPROM DATA INPUT/OUTPUT
SERIAL/PLL CLOCK OUTPUT ←	17	P46/SCLK	P14/SDA2	34	N. C.
+5V	18	AVCC	P05	35	N. C.
R,C FILTER CONNECT →	19	HLF	P16	34	N. C.
R CONNECT →	20	RVCO	P03	33	N. C.
C CONNECT →	21	VHOLD	P30	32	N. C.
COMPOSITE VIDEO INPUT →	22	CVIN	P31	31	N. C.
GND	23	CNVSS	RESET	30	→ RESET INPUT
MAIN CLOCK (4.19MHz) →	24	XIN	P64/OSC2/XCOUT	29	→ SUB CLOCK(32.768KHz)
MAIN CLOCK (4.19MHz) ←	25	XOUT	P63/OSC2/XCIN	28	← SUB CLOCK (32.768KHz)
GND	26	VSS	VCC	27	→ +5V

2. Pin discription

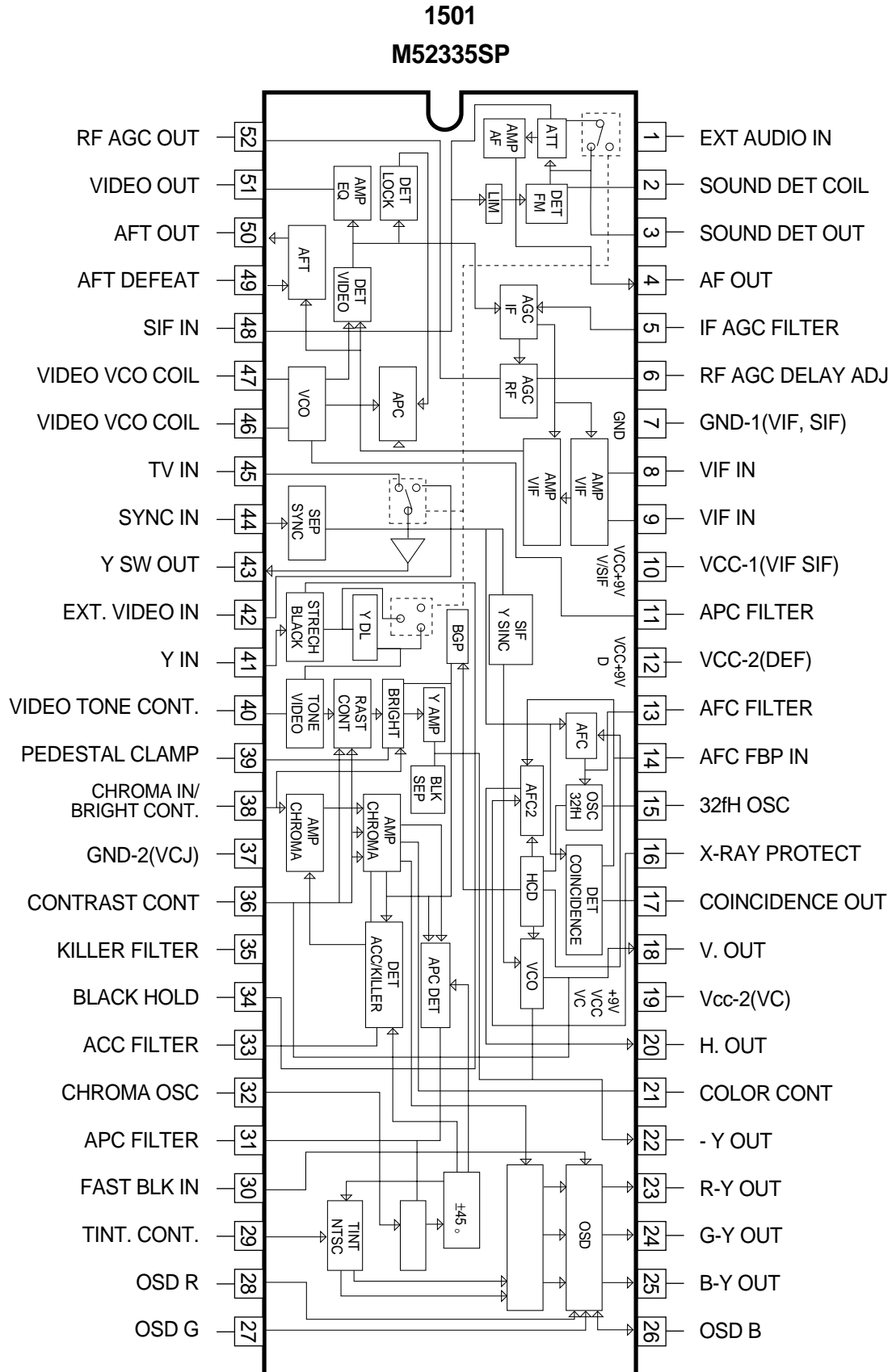
PIN NO	NO	NAME	DISCRIPTION	I/O	ACTIVE
1	HSYNC	HSYNC	HSYNC INPUT TERMINAL	I	
2	VSYNC	VSYNC	V SYNC INPUT TERMINAL	I	
3	P4 ₀ /MXR/AD4	AFT	AFT SIGNAL INPUT TERMINAL	I	
4	P4 ₁ /INT2/MXG	N. C.	NOT USED	–	
5	P4 ₂ /TIM2/MXB	SD	SYNC DETECT INPUT TERMINAL	I	HIGH
6	P4 ₃ /TIM3/MXOUT	N. C.	NOT USED	–	
7	P2 ₄ /AD3	N. C.	NOT USED	–	
8	P2 ₅ /AD2	N. C.	NOT USED	–	
9	P2 ₆ /AD1	MONITOR ON	MONITOR POWER ON OUTPUT SIGNAL	O	LOW
10	P2 ₇	S. STROBE	SERIAL STROBE OUTPUT SIGNAL	O	LOW
11	P0 ₀ /PWM4	TINT	TINT PWM OUTPUT SIGNAL	O	
12	P0 ₁ /PWM5	COLOR	COLOR PWM OUTPUT SIGNAL	O	
13	P0 ₂ /PWM6	PLL STROBE	PLL STROBE OUTPUT SIGNAL	O	
14	P1 ₇ /SIN	S. DATA IN	SERIAL DATA INPUT SIGNAL	I	
15	P4 ₄ /INT1	POWER FALL	POWER DATA INPUT SIGNAL	I	LOW
16	P4 ₅ /SOUT	S. DATA OUT	SERIAL/PLL DATA OUTPUT SIGNAL	O	
17	P4 ₆ /SCLK	S. CLOCK	SERIAL/PLL CLOCK OUTPUT SIGNAL	O	
18	AVcc	AVCC	Analog Vcc(+5V)	–	
19	HLF	HLF	R,C FILTER CONNECT TERMIAL		
20	RVCO	RVCO	R CONNECT TERMINAL		
21	V _{HOLD}	V HOLD	C CONNECT TERMINAL		
22	CV _{IN}	CVIN	Composite video INPUT TERMINAL	I	
23	CNV _{ss}	GND	ANALOG GND terminal	–	

PIN NO	NO	NAME	DISCRIPTION	I/O	ACTIVE
24	XIN	X IN	MAIN CLOCK (4.19MHz)	I	
25	XOUT	X OUT	MAIN CLOCK (4.19MHz)	O	
26	VSS	GND	MAIN CPU GND TERMINAL	–	
27	VCC	VCC	MAIN CPU POWER TERMINAL (+5 CONNECT)	–	
28	P6 ₃ /OSC2/XCIN	OSC2	SUB CLOCK (32.768KHz)	I	
29	P6 ₄ /OSC2/XCOUT	OSC1	SUB CLOCK (32.768KHz)	O	
30	$\overline{\text{RESET}}$	RESET	CPU RESET INPUT TERMINAL	I	LOW
31	P3 ₁	N. C.	NOT USED	–	
32	P3 ₀	N. C.	NOT USED	–	
33	P0 ₃	N. C.	NOT USED	–	
34	P1 ₆	N. C.	NOT USED	–	
35	P0 ₅	N. C.	NOT USED	–	
36	P1 ₄ /SDA2	N. C.	NOT USED	–	
37	P1 ₃ /SDA1	E ² PROM DATA	E ² PROM DATA IN/OUT TERMINAL	I/O	
38	P1 ₂ /SCL2	N. C.	NOT CONNECTED	I	
39	P1 ₁ /SCL1	E ² PROM CLOCK	E ² PROM CLOCK OUTPUT TERMINAL	O	
40	P1 ₀ /OUT2	N. C.	NOT CONNECTED	O	
41	P2 ₃	VER SW		O	
42	P2 ₂	TV/AV	TV (L) AV(H) OUTPUT TERMINAL	O	
43	P2 ₁	V MUTE	VIDEO MUTE(H) OUTPUT TERMINAL	O	HIGH
44	P2 ₀	A MUTE	AUDIO MUTE(H) OUTPUT TERMINAL	O	HIGH
45	P0 ₇ /PWM3	VOLUME	VOLUME PWM OUTPUT TERMINAL	O	
46	P0 ₆ /PWM2	SHARP	SHARPNESS PWM OUTPUT TERMINAL	O	

PIN NO	NO	NAME	DISCRIPTION	I/O	ACTIVE
47	P0 ₅ /PWM1	BRIGHT	BRIGHT PWM OUTPUT TERMINAL	I	
48	P0 ₄ /PWM0	CONTRAST	CONTRAST PWM OUTPUT TERMINAL	O	
49	P5 ₅ /OUT1	BLANK	BLINKING OUTPUT TERMINAL	O	
50	P5 ₄ /B	B	B OUTPUT TERMINAL	O	
51	P5 ₃ /G	G	G OUTPUT TERMINAL	I	
52	P5 ₂ /R	R	R OUTPUT TERMINAL	O	

1501 (CHROMA IC : M52335SP - 600)

1. Pin Layout



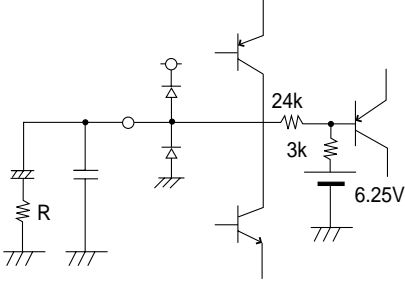
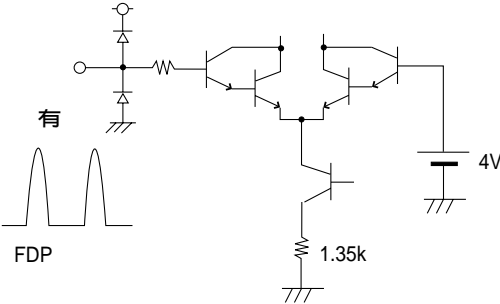
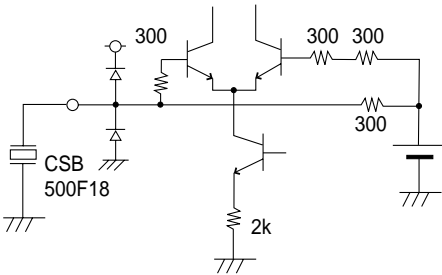
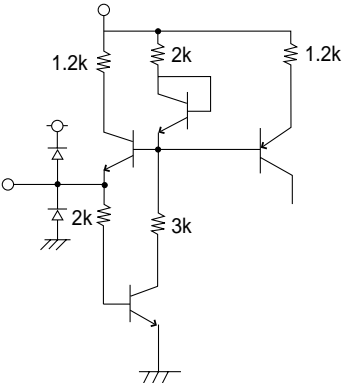
2. DESCRIPTION OF PIN

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
1	EXT AUDIO IN	3.25V		The Input impedance is 18kΩ. Add a bias to outside as shown right for use.
2	SOUND DET COIL	2.5V		<p>The EM detector is a quadrature detector and externally connects a tank coil or discriminator.</p> <p>This is also used as an AV switching pin to apply voltage through a 10kΩ.</p> <p>GND to EXT(Y-DL) OPEN to TV(Y-DL) Vcc(5V) to TV(S input)</p>
3	SOUND DET OUT	3.75V (Varying with coil position)		Sound direct output pin. for de-emphasis, connect a capacitor between this pin and GND.
4	AF OUT	4.2V		Sound putput pin through ATT.

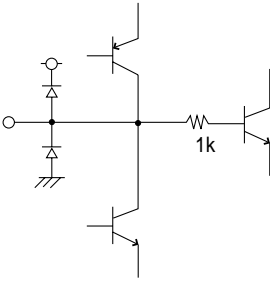
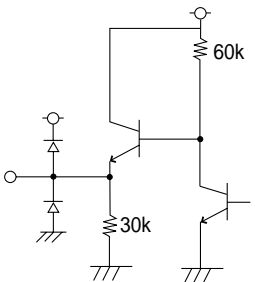
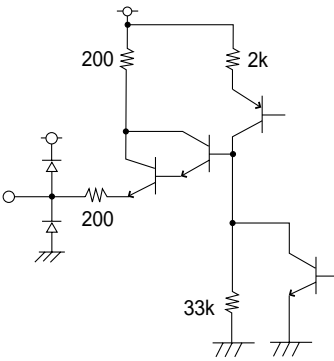
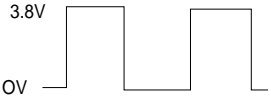
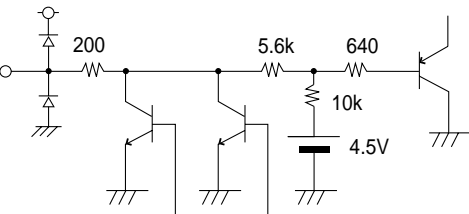
DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
5	IF AGC FILTER	4.4 to 1.5V		<p>Dynamic AGC circuit is used to improve AGC response characteristics. Set a filter constant to avoid a sag around 70dBμ.</p> <p>IF AGC Voltage 4.4V</p> <p>50dBμ 70dBμ 100dBμ IF Input</p>
6	RF AGC DELAYDJ.	—		<p>RFAGC delay point is set by the voltage applied to this pin.</p>
7	GND-1 (YIF SIF)	—	—	—
8 9	VIF IN	1.5V		<p>Input resistance is 1kΩ. Input capacitance is 7pF.</p>
10	Vcc-1 (VIF SIF)	5V	—	—
11	APC FILTER	3V		<p>11 pin Output</p> <p>The f characteristic of a loop in the locked state can be set by R. Normally set to in the range of 100 to 150kHz.</p> <p>fc frequency</p> <p>fo</p> <p>IF frequency</p>

DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
12	H. Vcc	_____	_____	Power supply pin for horizontal and vertical systems. its current is about 34mA.
13	AFC FILTER	6.25V		Horizontal AFC filter pin. Action against VCR skews can be taken by increasing an external resistor R to provide a faster response speed. However, horizontal jitters in a weak electric field will increase.
14	AFC FSP IN	_____		Flyback pulse is sliced on 4V to generate an AFC2 detector pulse. Remember that any peak around 4V may cause jitters. The screen moves rightward by integrating and entering the flyback pulse.
15	32H OSC	3.8V		CSB500F18 is used.
16	X-RAY PROTECT	_____		Applying voltage of 0.7V or more operates the X-ray protector. connect to GND if not using the pin.

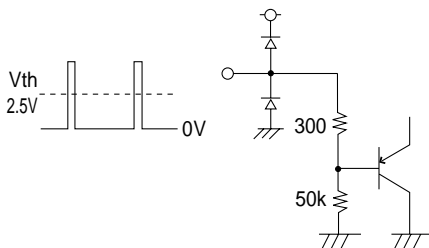
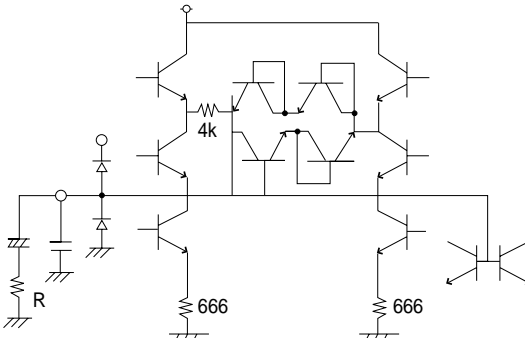
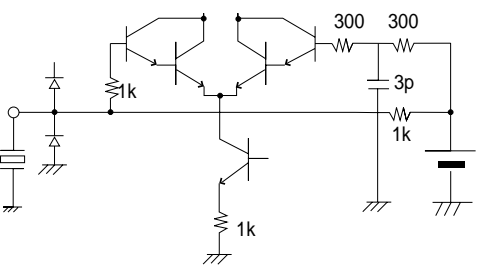
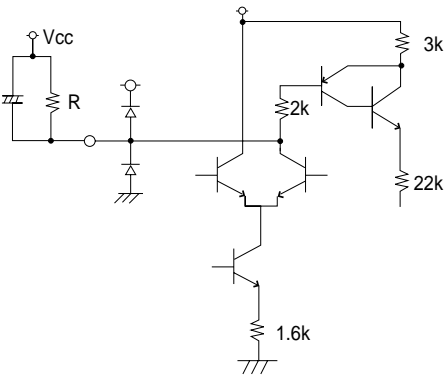
DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
17	COINCIDENCE OUT	8V(Synchronous) to 0V(Asynchronous)		Voltage goes up if a sync signal is entered and horizontal AFC is locked; otherwise, the voltage goes down. therefore, the pin can be also used as a MUTE detector. At that time, pay attention to high impedance.
18	V.OUT	_____		Pulse as shown below is putput.
19	Vcc-2(VCJ)	9V	_____	Power supply for VC, AFT, RF AGC and SIF DET.
20	H.OUT	_____		Horizontal pulse of 24 μ s wide is output. It is open emitter output. 
21	COLOR CONT.	4.5V	 Killer Service SW	Color control pin. Its voltage goes to 0V when service SW is ON.

DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
20	Y. OUT	_____		Video output pin. when a flybaxk pulse is entered for blanking from outside, a blanking pulse is entered internal-ly and a chroma symbol is also blanked. The blanking threshold volt- age is 7.1V.
23 24 25	R-Y OUT G-Y OUT B-Y OUT	5.4V		Open emitter output with maximum current of about 5mA.
26 27 28	OSD B OSD G OSD R	_____		Input impedance is 50kΩ. apply voltage of 2.5V or more ewhen insedring a character signal.
29	TINT CONT.	4.5V		Tint control pin.

DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
30	FAST BLK IN	_____		Applying voltage of 2.5V or more causes blanking
31	APC FILTER	6.5V		Cap challenge is changed by R. As R is decreased, the cap challenge becomes narrower, but phase, jitters are reduced.
32	CHROMA OSC	6.8V	 <p>M351T01</p>	Use XTAL of series capacitance type.
33	ACC FILTER	_____		As R is decreased, chroma output increases but ACC is not activated smoothly.

DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
34	BLACK HOLD	About 3.2V		Pin holding the most dark part of a video signal. As R is increased, the black peak is held; contrarily, the peak gets closer to an average.
35	KILLER FILTER	7.6V at signal input		To decrease killer sensitivity, connect a several M of resistor between the pin and GND.
36	CONTRAST	Normally 4.8V Applied from outside		Can be controlled by 5.1V center
37	GND-2 (VCD)	—	—	—
38	CHROMA IN/ BRIGHTNESS	4.5V		Chroma signal standard. Make an entry at 200mVP-P. This pin is also used as a brightness control pin. DC reproduction ratio is 100%.

DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
39	PEDESTAL CLAMP	About 2.2V		Used to connect a hold capacitor.
40	VIDEO TONE CONT.	4.5V		Sharpness control pin. By increasing voltage, the pin is set to soft side.
41	Y IN	3.3V		Make an entry at low input impedance to avoid pedestal clamp. Standard coupling capacitor is 0.1μ F. Make an entry at 0.5Vp-p.
42	EXT VIDEO IN	—		Make an entry at 1Vp-p.

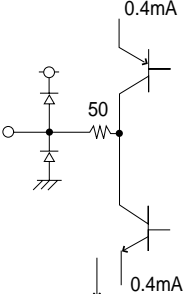
DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
43	Y SW OUT	2.5V		Output at 1.5Vp-p.
44	SYNC IN.	6.6V		Sync separation of emitter input type. Vertical sync separation is done inside the 1C.
45	TV IN	2.5V		Make an entry at 1V p-p.
46 47	VCO COIL	4V		Reference tuning capacitance is 27pF. As the capacitance is decrease, the variable range becomes wider but stablility becomes worse.

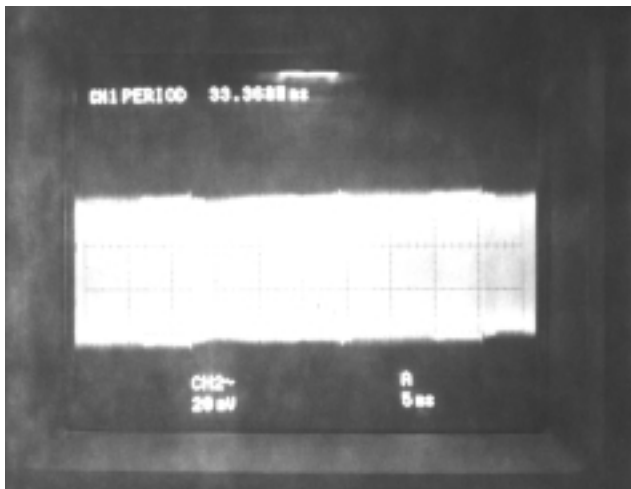
DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
48	SIF IN/ATT	4.5V		Volume control pin.
49	AFT DEFEAT	—		Applying voltage Of 2.5v or more defeats AFT.
50	AFT OUT	8.2 to 0.5V		Current output type. As load resistor R is increased, detector sensitivity becomes higher but offset becomes larger.
51	VIDEO OUT	—		Output at 1.4Vp-p 1.75V is applied to sink tip.

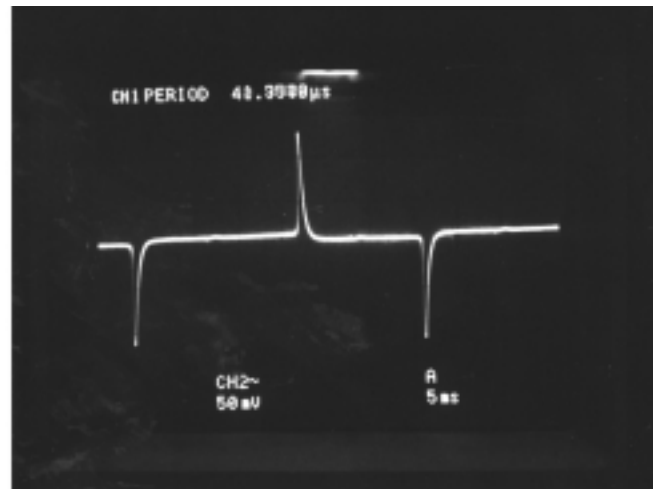
DESCRIPTION OF PIN (cont).

Pin No.	Name	Voltage and wave Information	Peripheral circuit of pins	Description of function
52	RF AGC OUT	—		current output type. Max. 0.4mA.

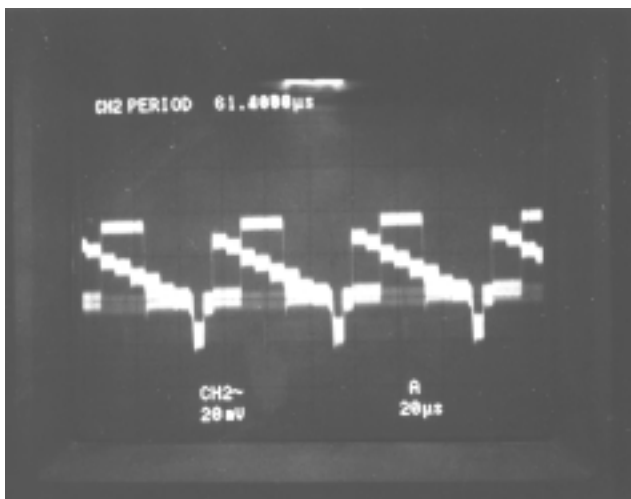
IMPORTANT SIGNAL WAVEFORMS



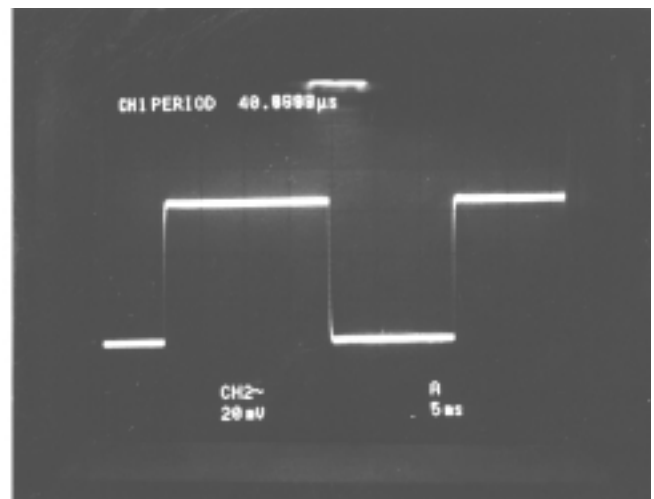
IY01 PIN 14 (PB ENVELOPE)



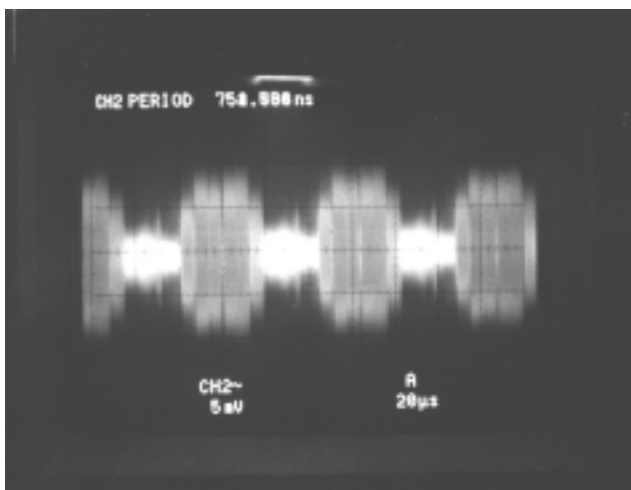
IN03 PIN 1(CTL HEAD -)



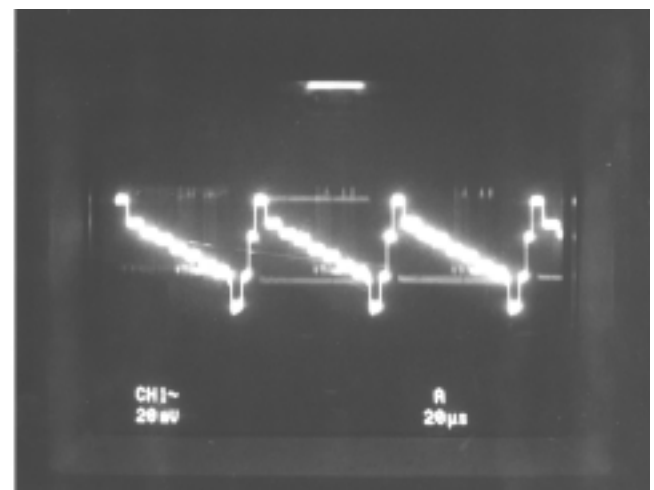
IY01 PIN 2 (PLAY)



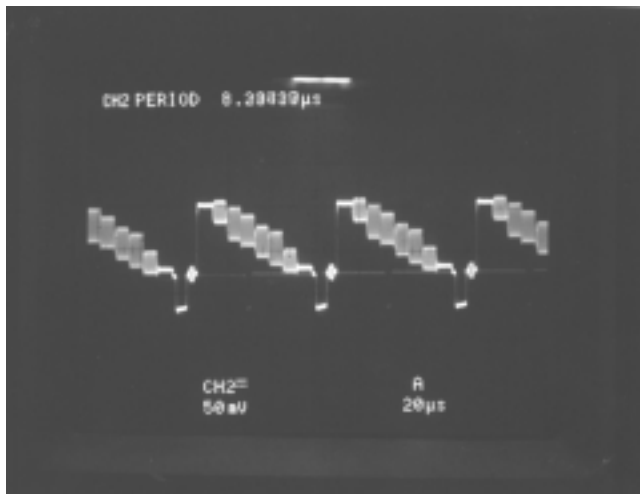
IN01 PIN 20 (CTL PULSE)



I501 PIN 38



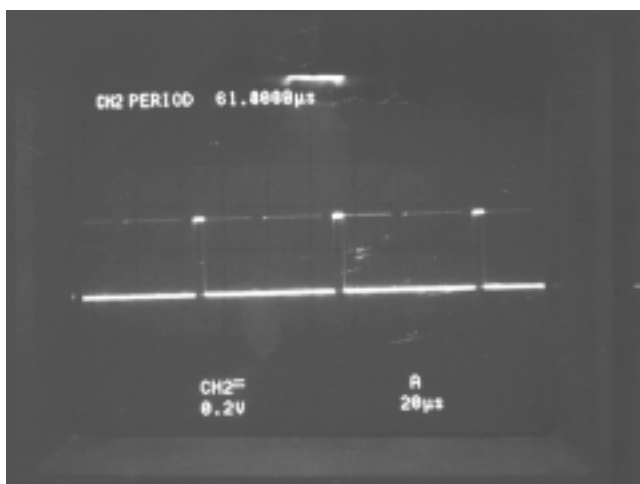
IY01 PIN 2 (REC)



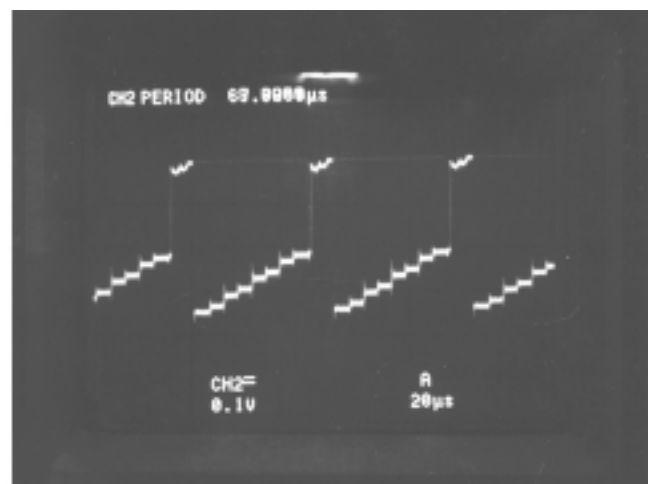
I501 PIN 43 & IY01 PIN 31 VIDEO



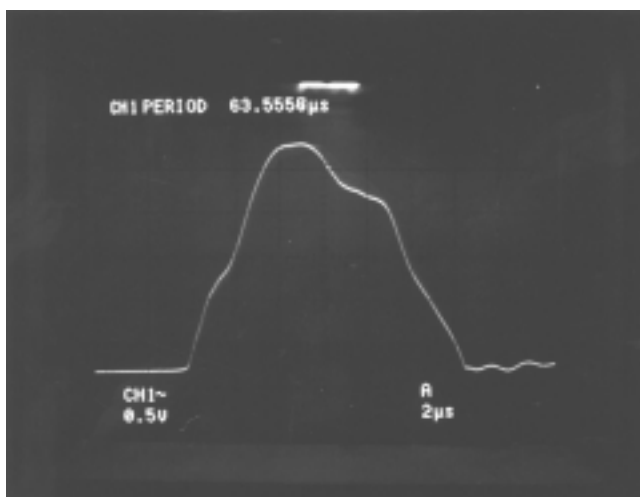
IY01 PIN 28 VIDEO OUT (PLAY)



IY01 PIN 26 (C SYNC)

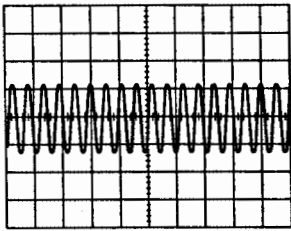


P504 PIN 4 (-Y)

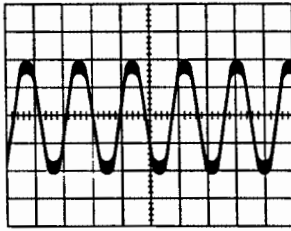


PH502 PIN 2 (HEATER PULSE)

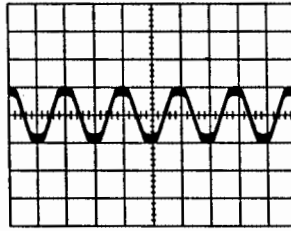
AUDIO WAVE FORMS.



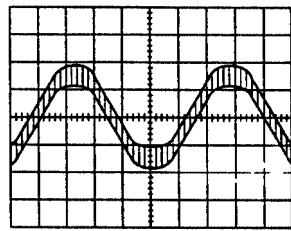
(IU01-3) REC



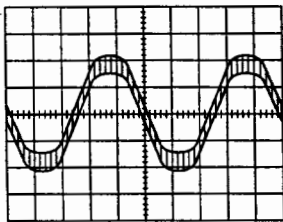
(IU01-10) PLAY



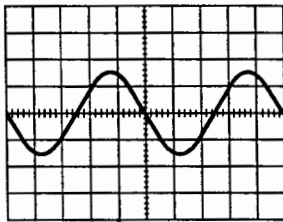
(IU01-12) PLAY



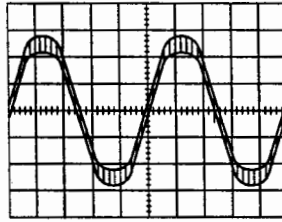
(IU01-16) REC



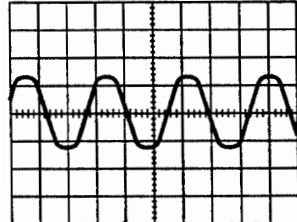
(IU01-21) REC



(IU01-22) REC



(IU01-23) REC (SP Mode)



(LU06-7) REC

TROUBLESHOOTING ACCORDING TO CAUSE AND SYMPTOM

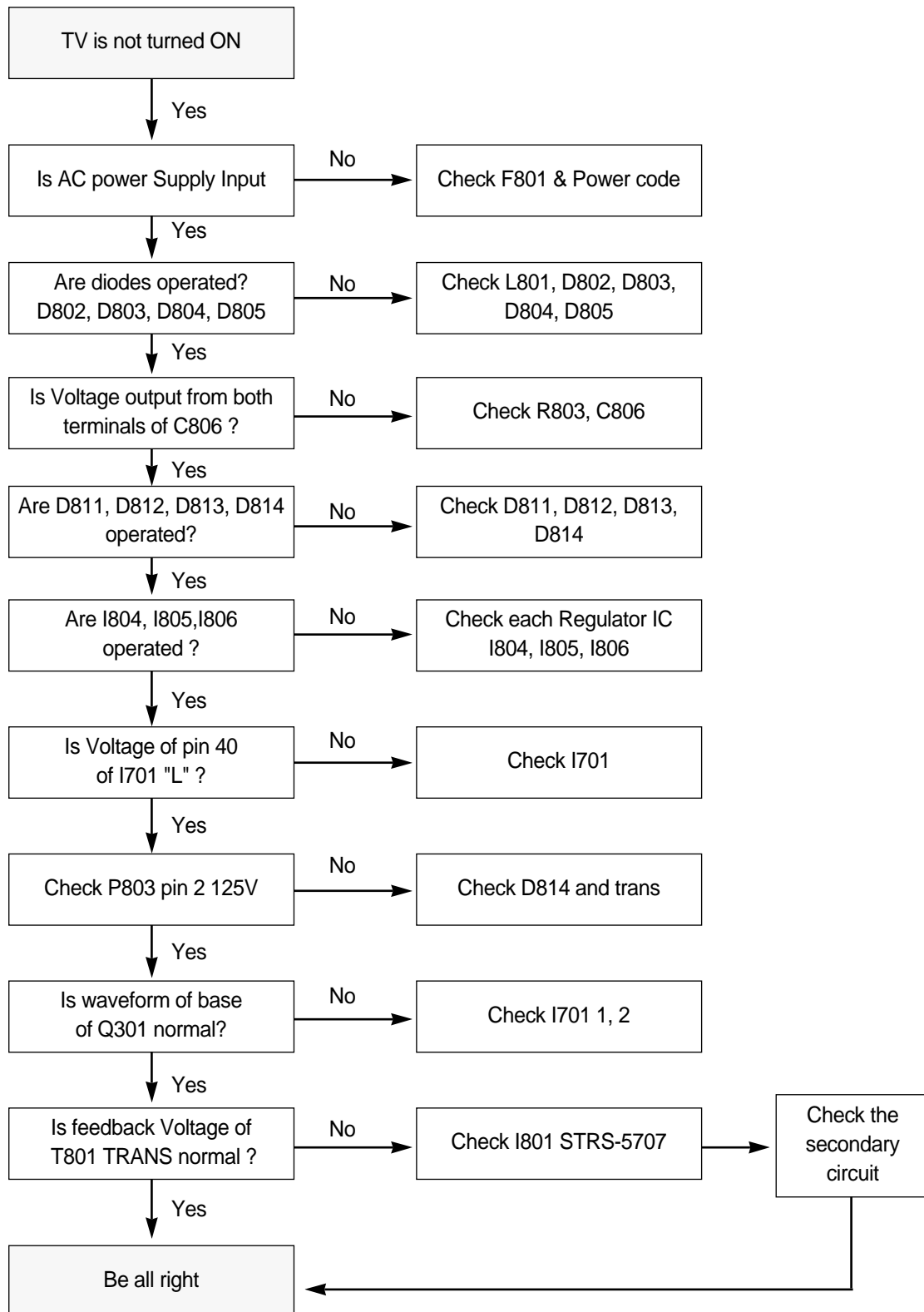
1. POWER SUPPLY UNIT
2. VERTICAL, HORIZONTAL UNIT
3. SERVO/SYSCON UNIT
4. VIDEO UNIT
5. AUDIO UNIT

– Before Troubleshooting, Read followings.

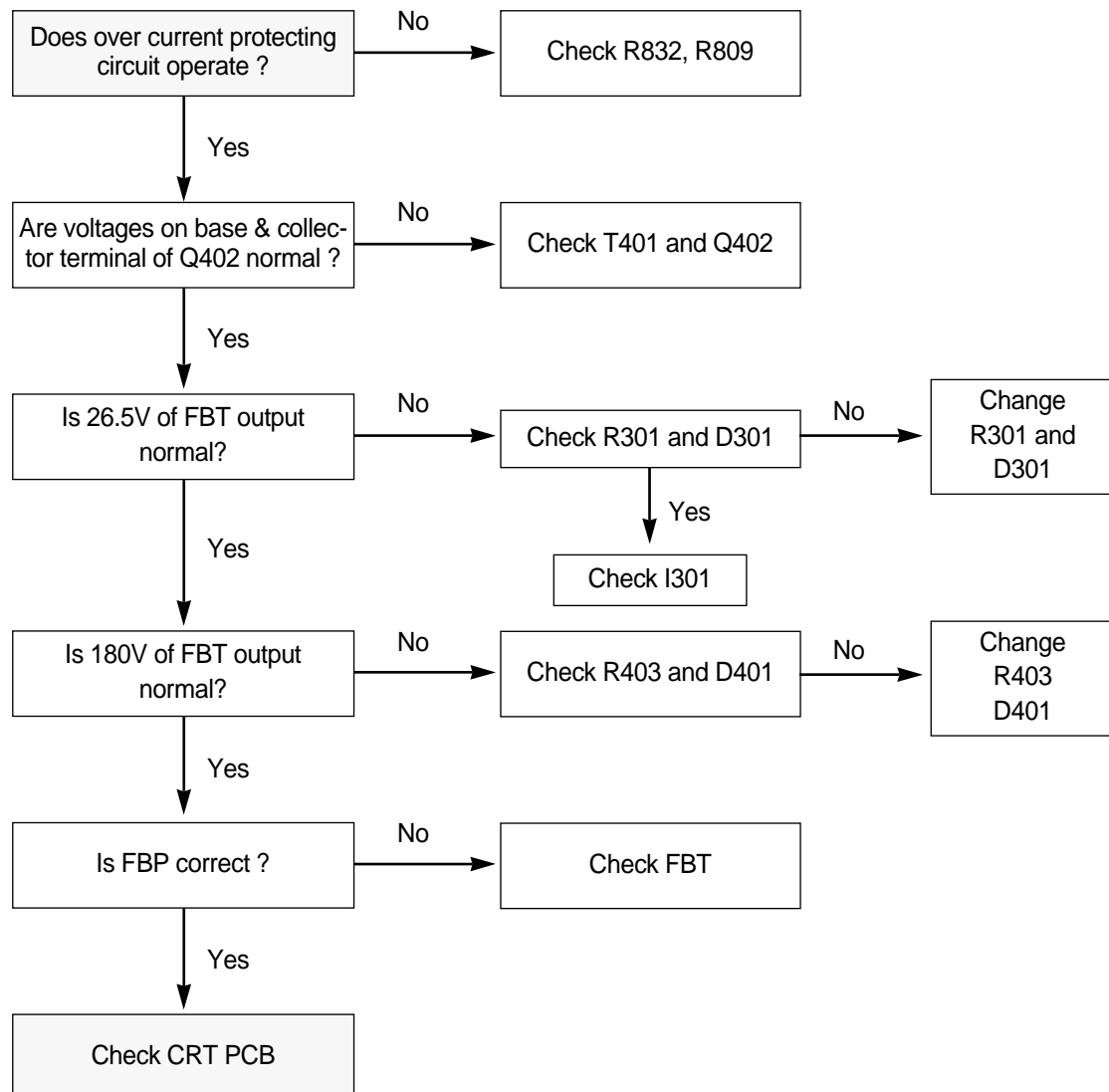
- Picture is not appeared when occurs following items.
 - 1) When power supply is not supplied
 - 2) When horizontal output TR is dead
 - 3) When operation of over current protecting circuit.
 - 4) When +125V is not supplied to FBT.
- Suggestions when service power supply unit.
 - 1) When change components of trouble part, disconnect Power pulg and discharge voltage across both terminals of C806 completely. (use scores of KOHM resistance on the outside)
 - 2) When examine the priwary circuit using oscilloscope, insulate oscilloscope surely and connect to the primary GND.
 - 3) Check Fuse and cement resistance when change trouble part.
 - 4) Check soldering conditions of heat sink and other parts after completing services.

1. Power supply unit

A.

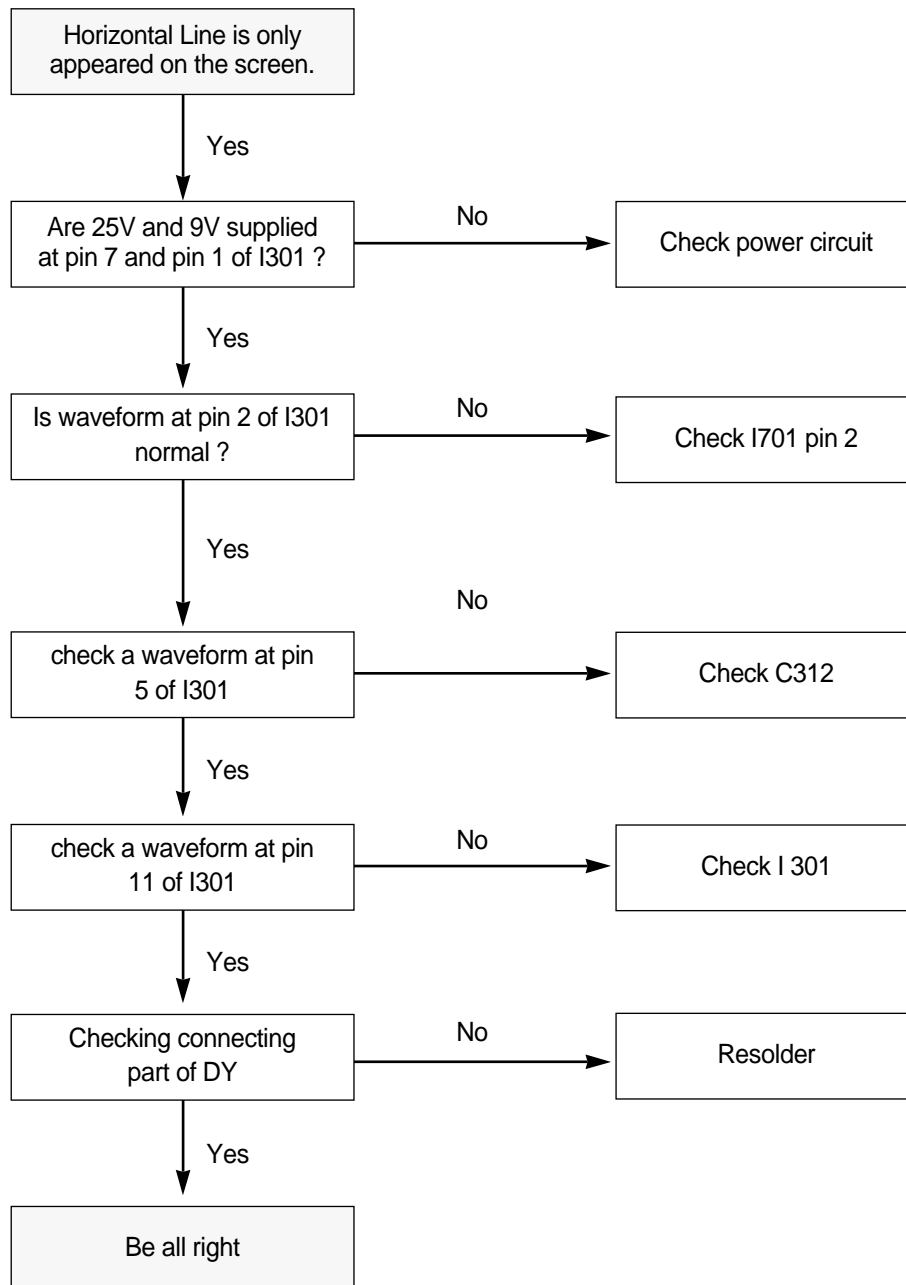


– check 125V unit

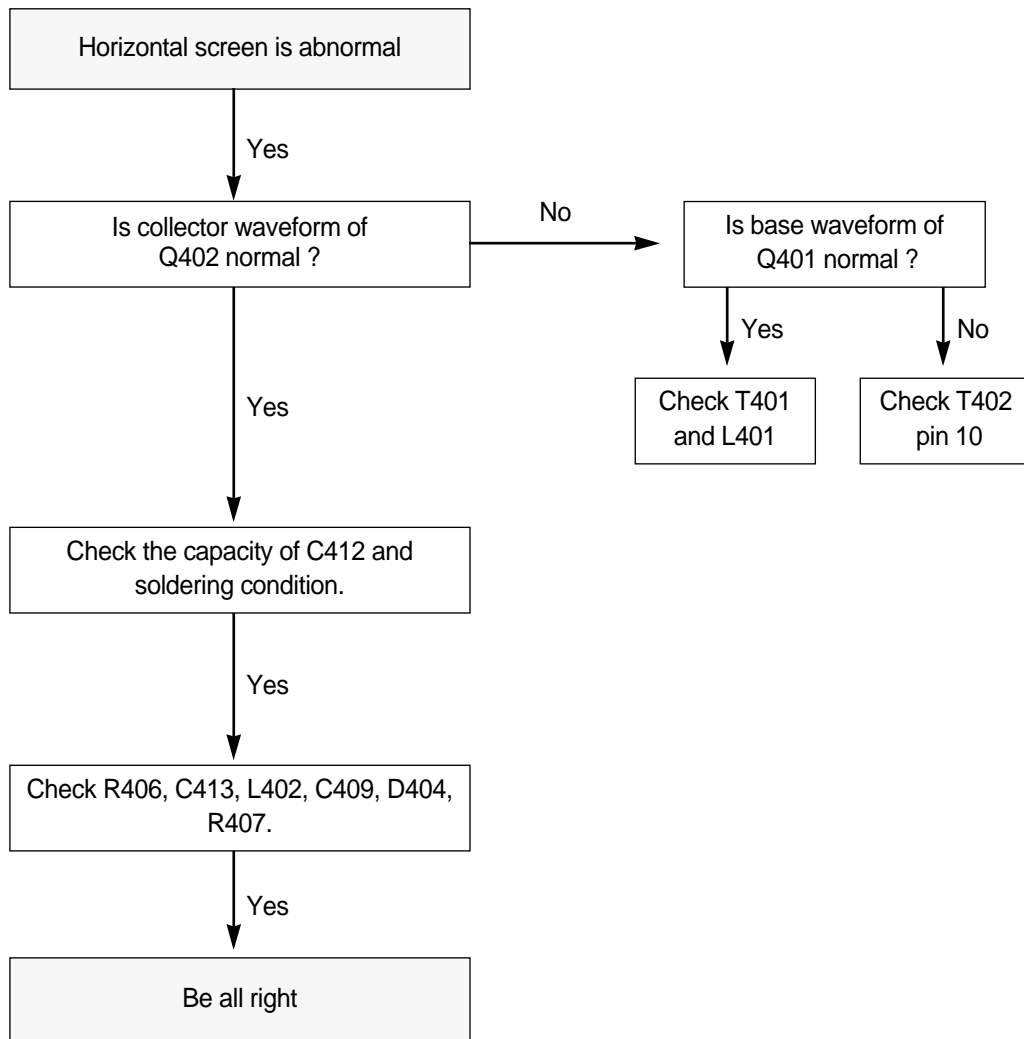


2. VERTICAL, HORIZONTAL UNIT.

A.

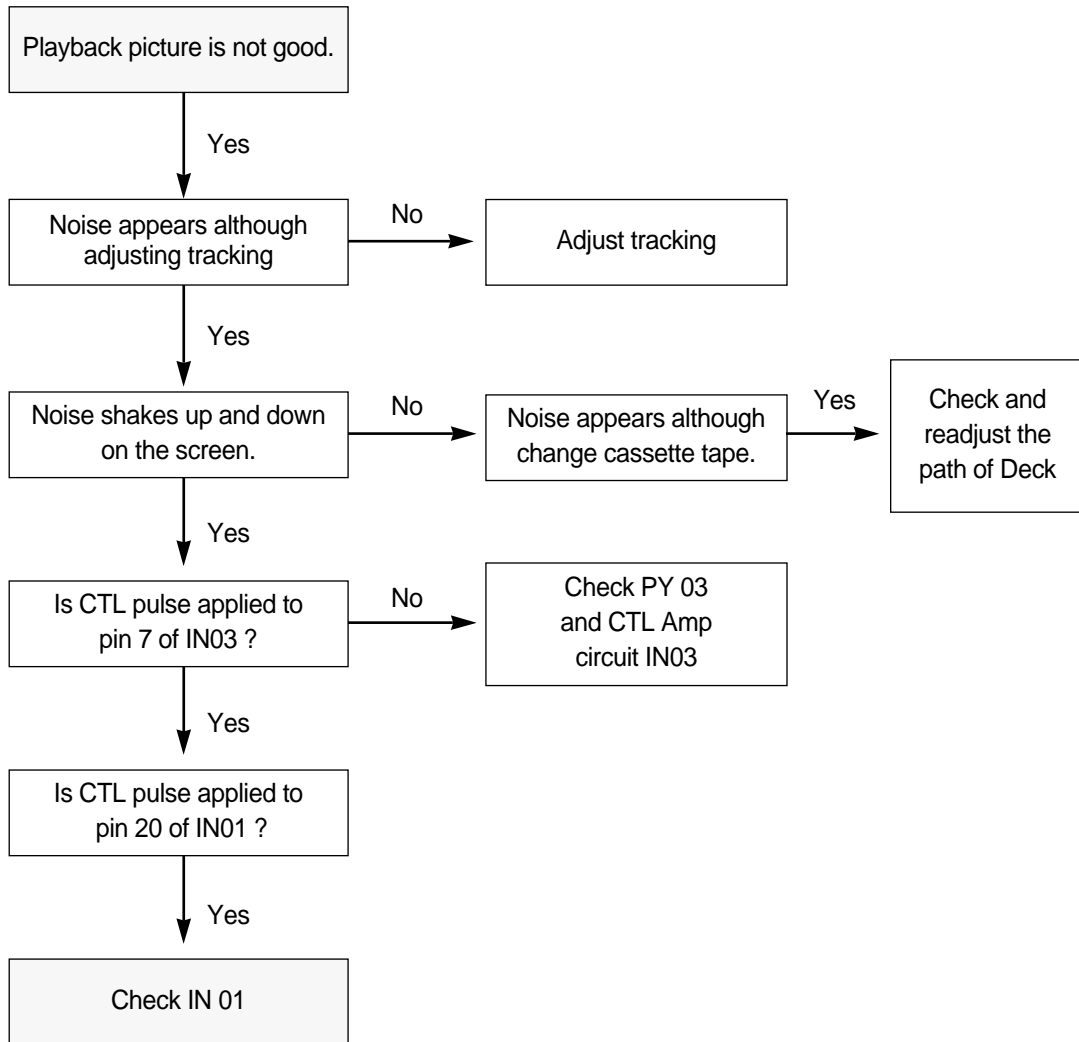


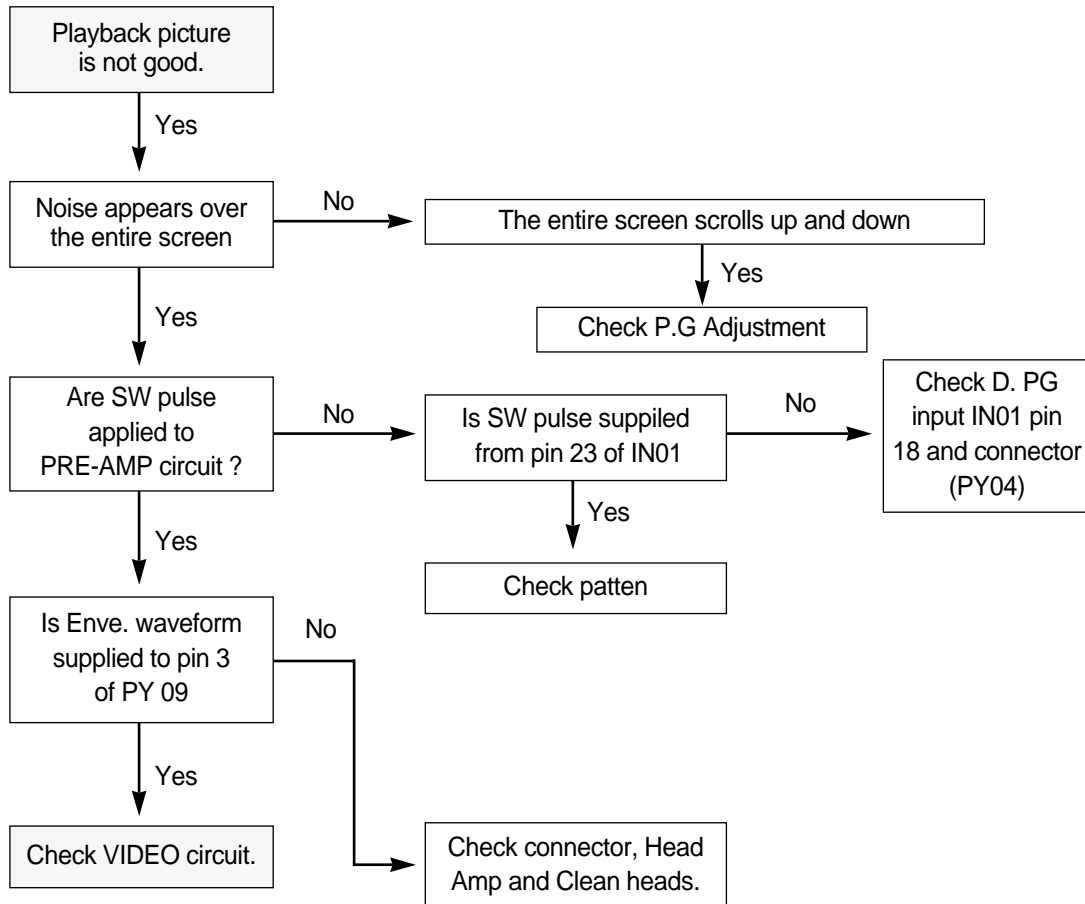
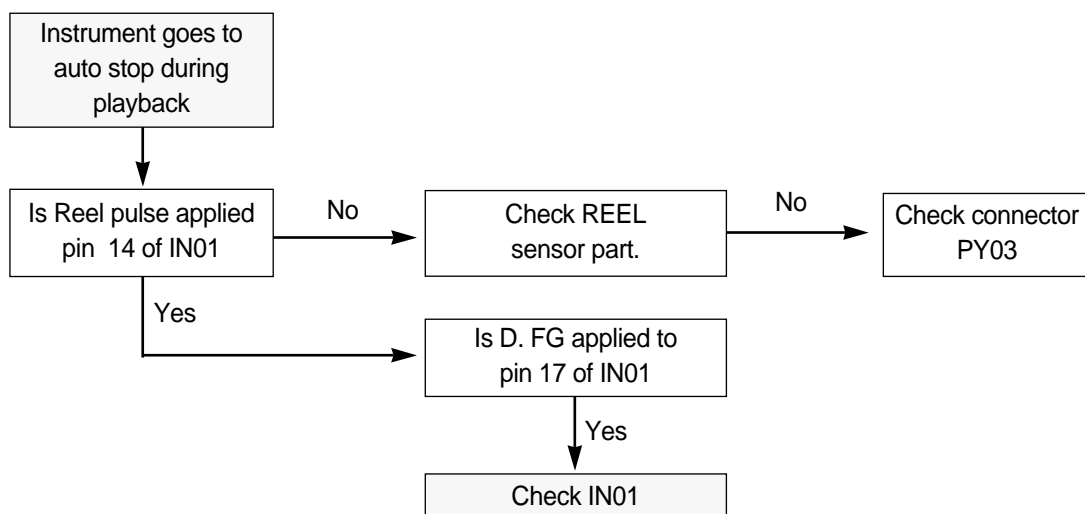
B.

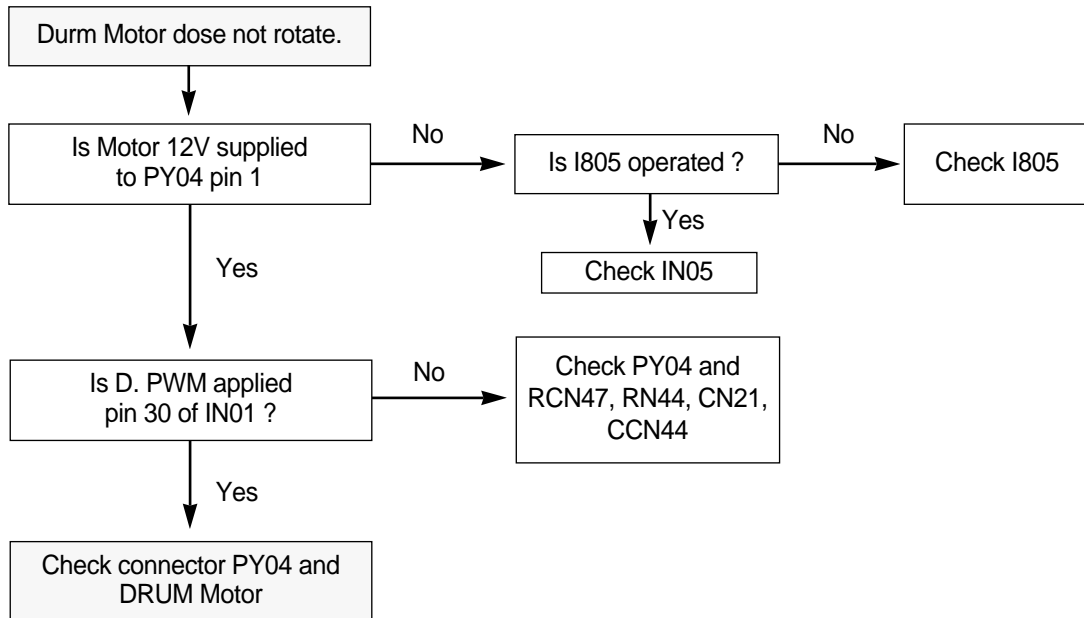
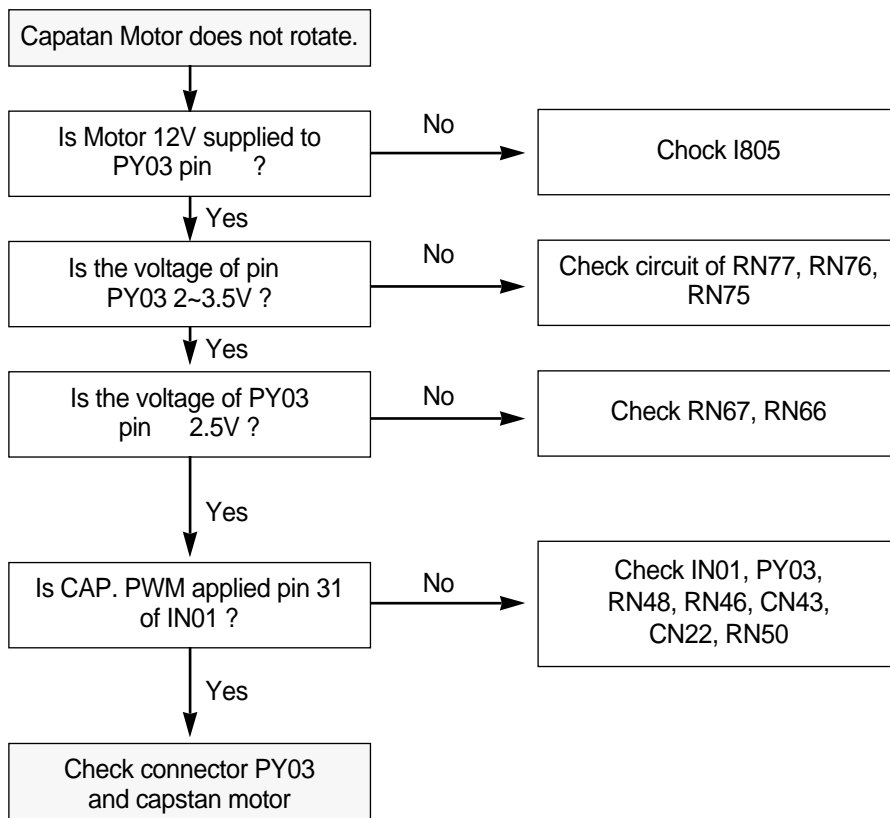


3. SERVO/SYSCON UNIT

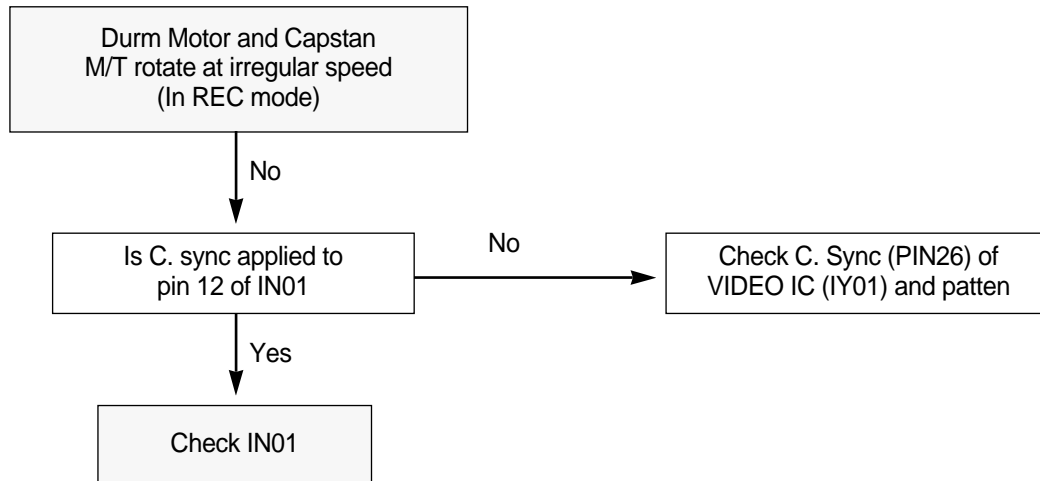
A.



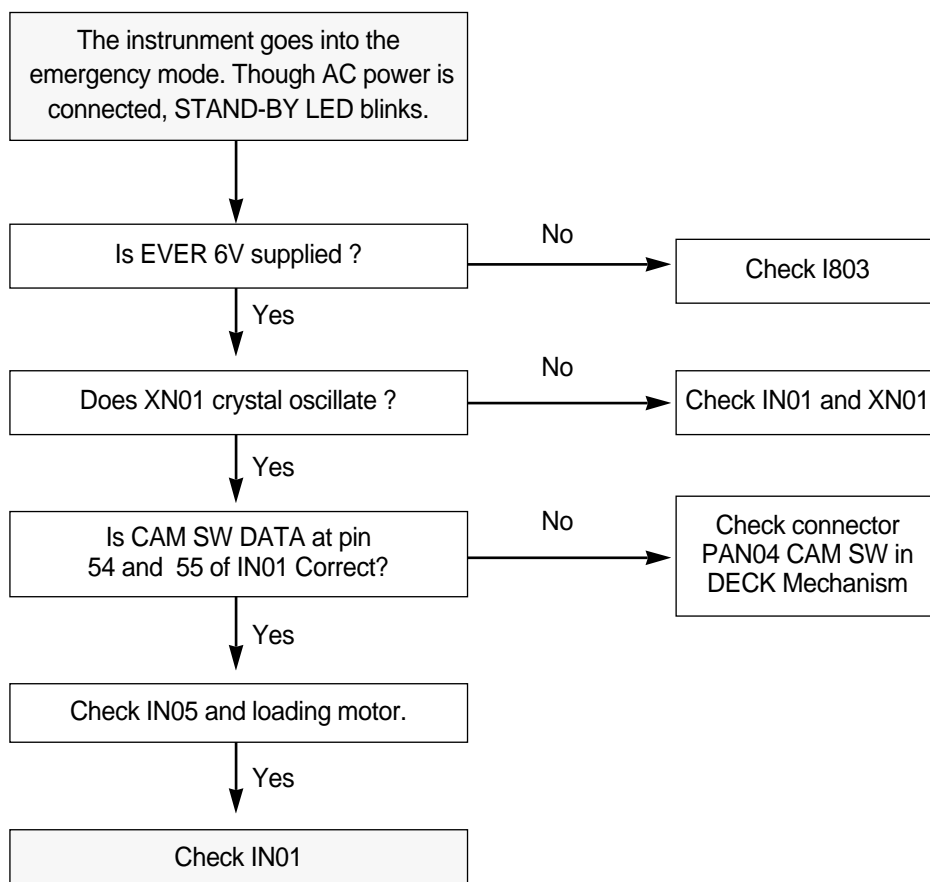
B.**C.**

D.**E.**

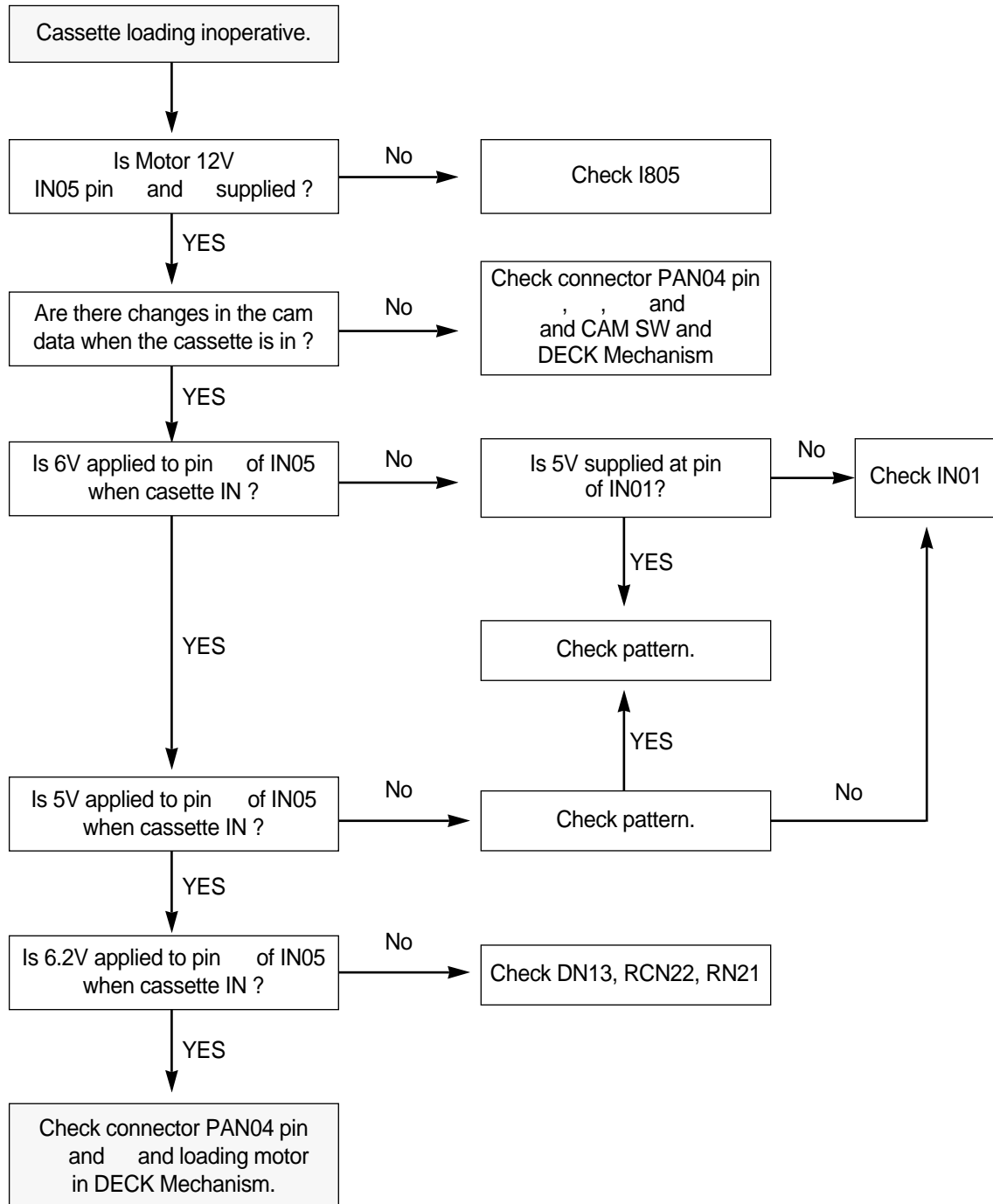
F.



G.

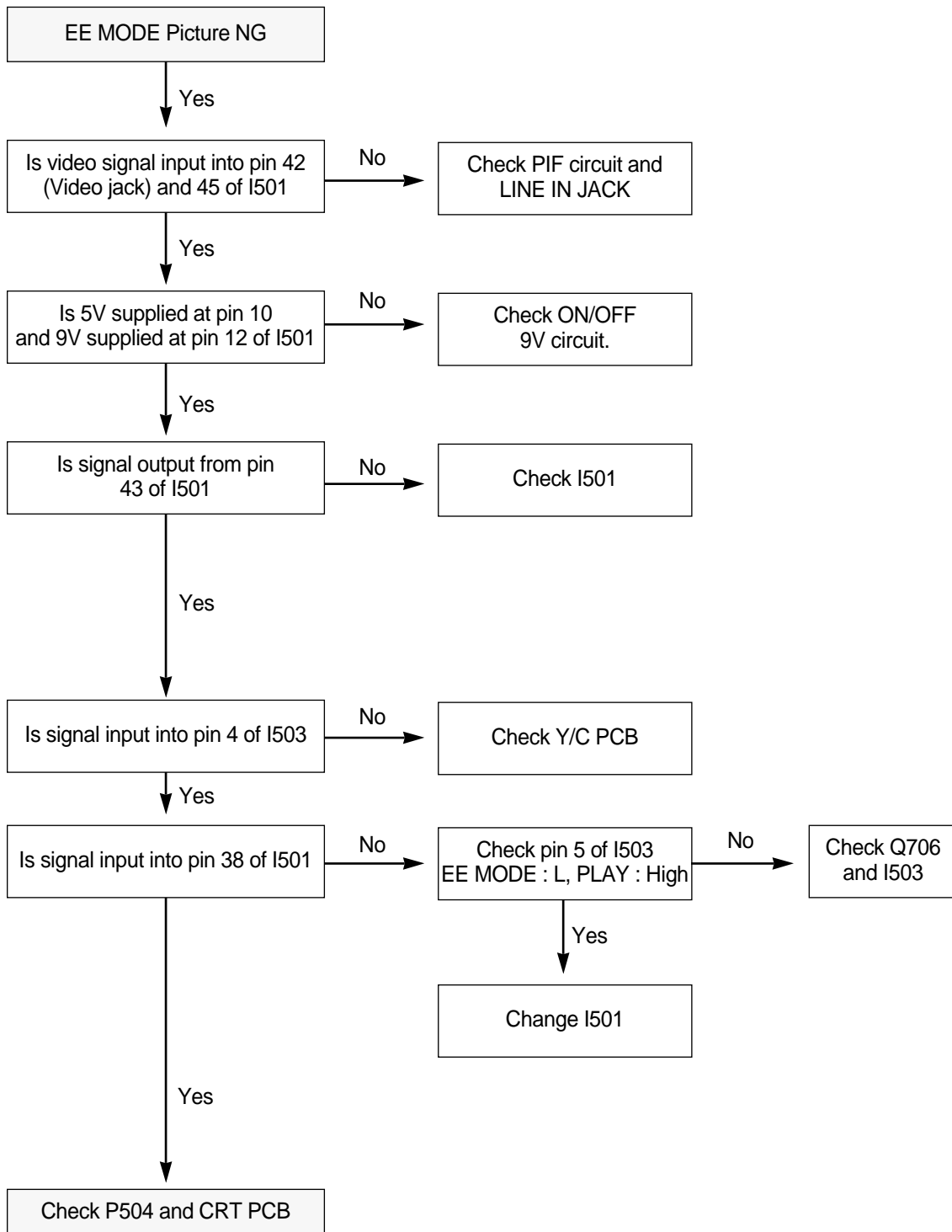


H.

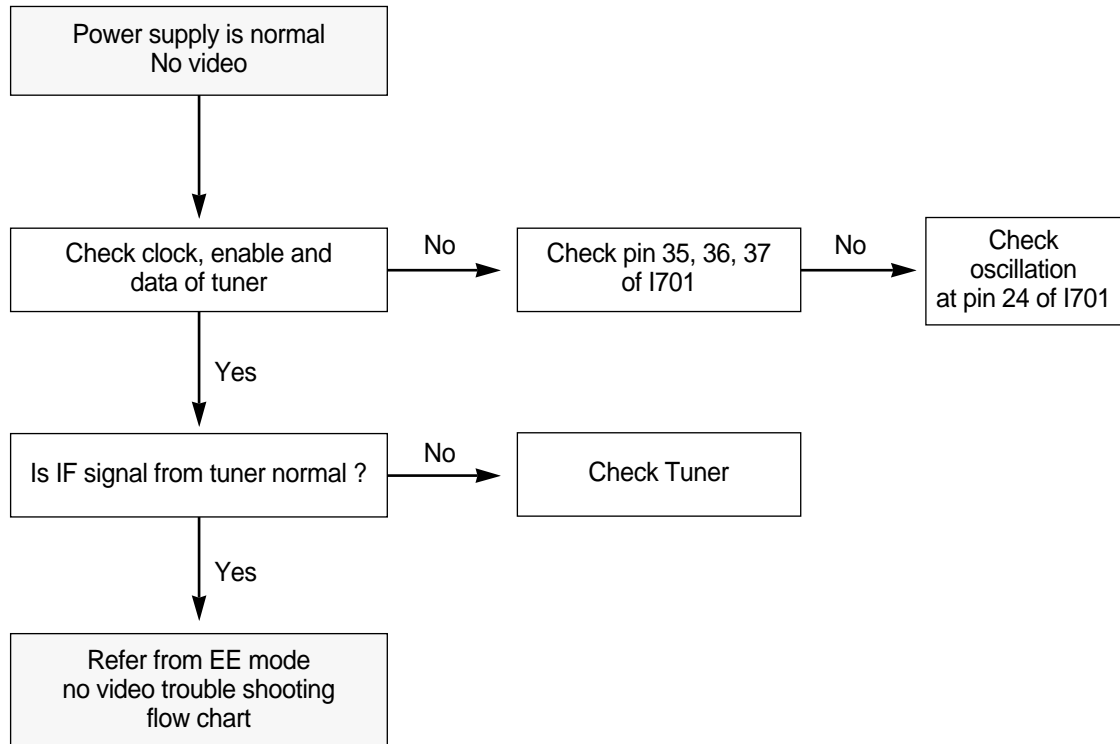


4. VIDEO UNIT

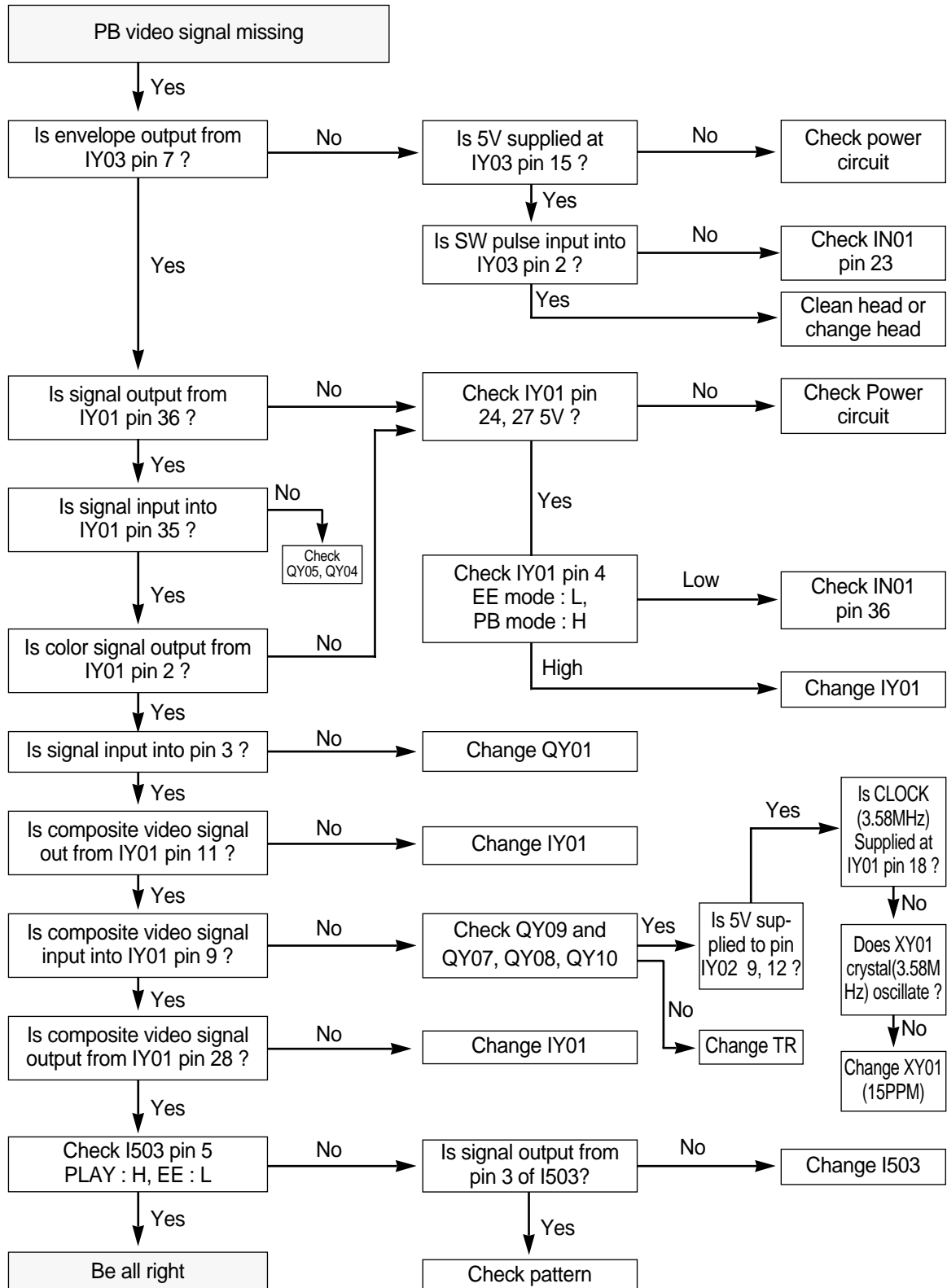
A.



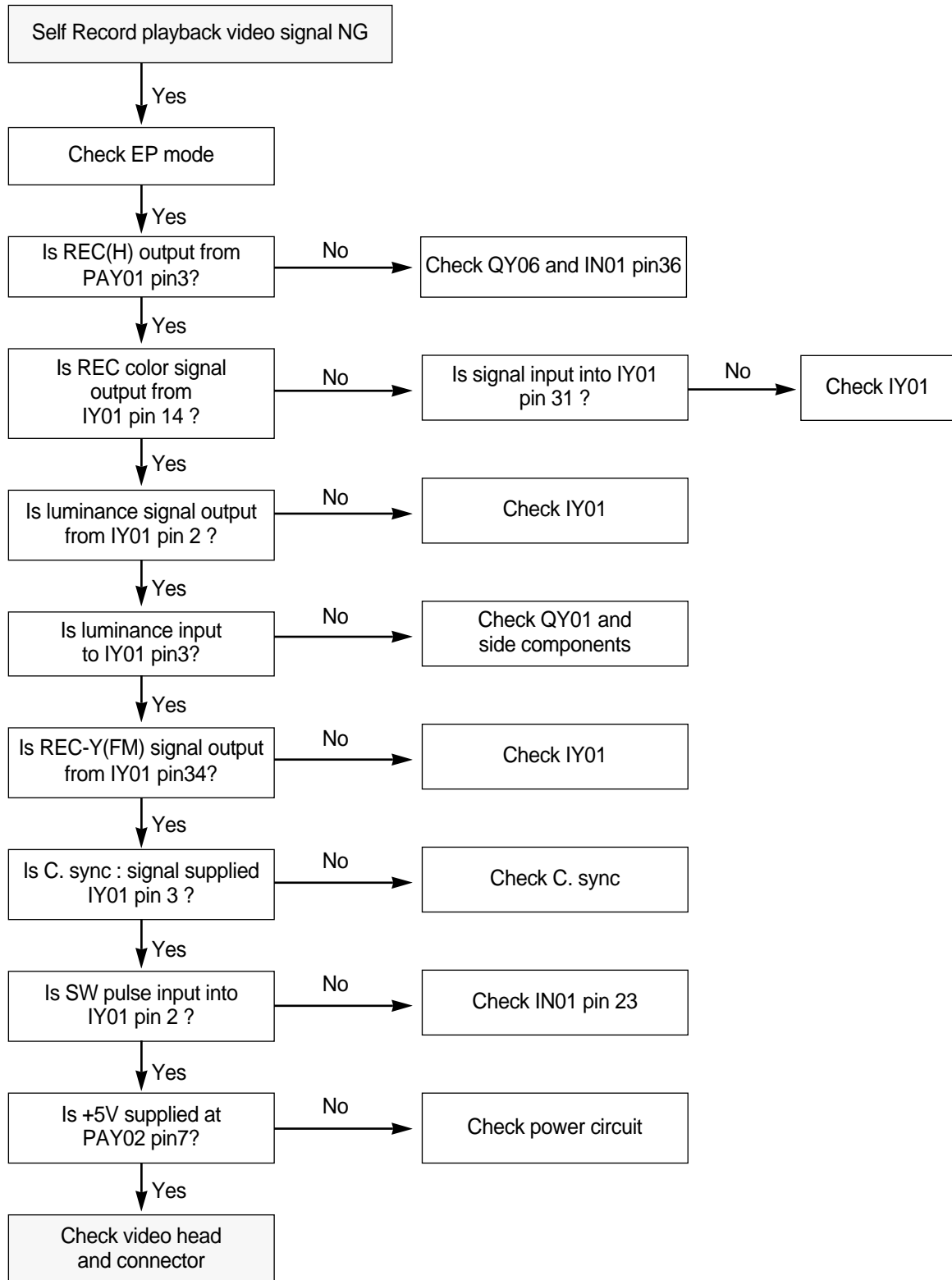
B.



C.

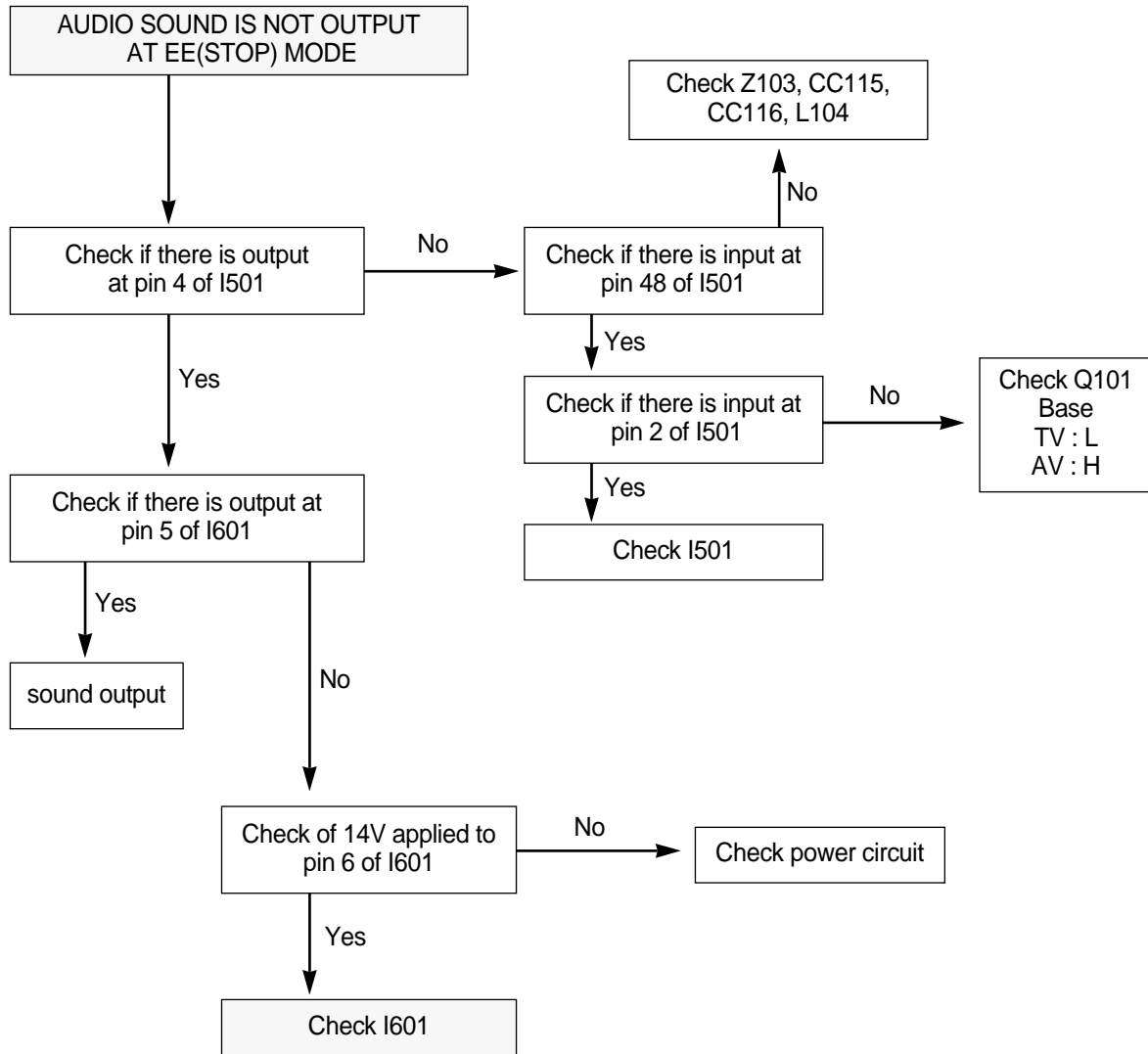


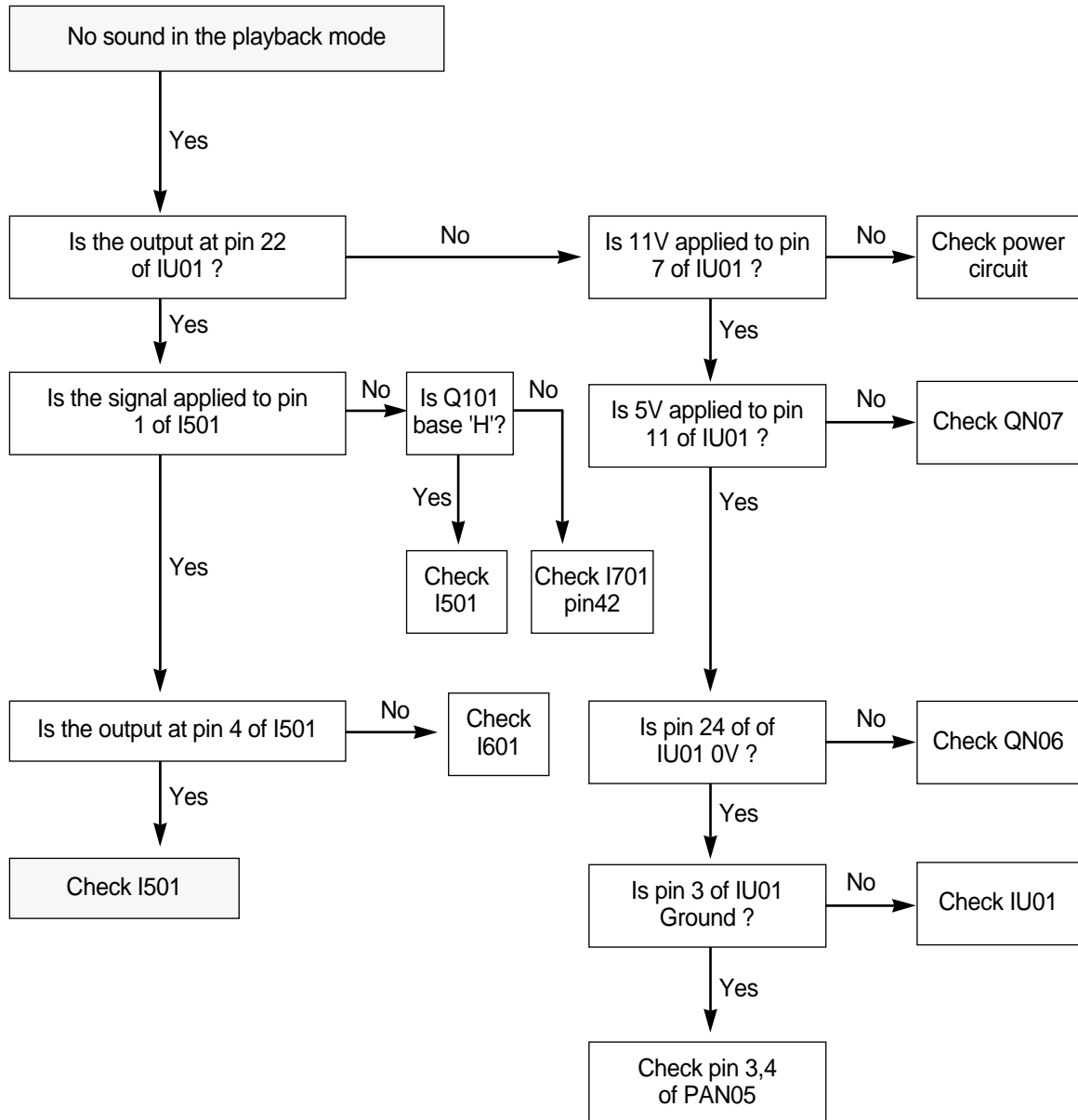
D.



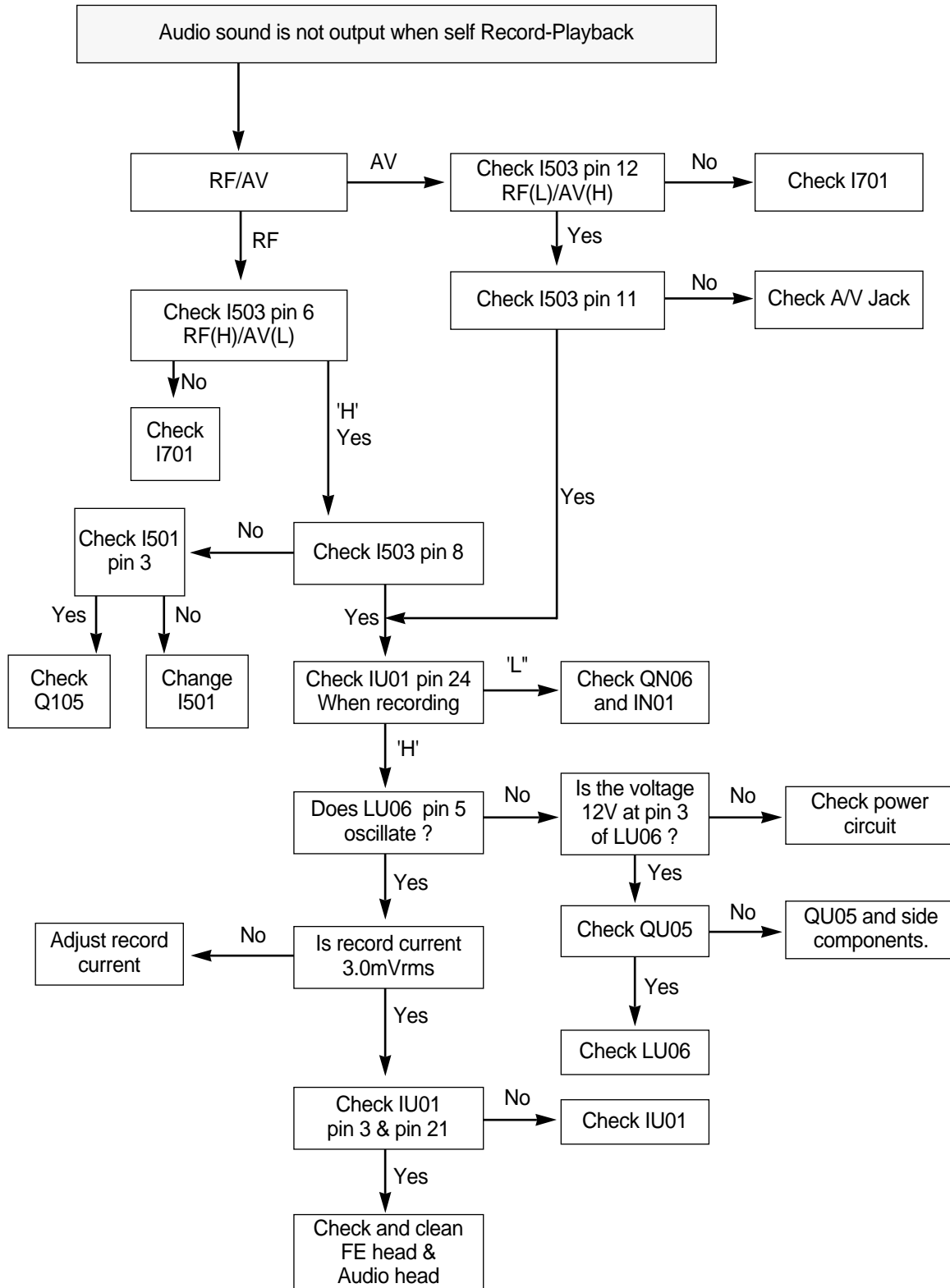
5. AUDIO UNIT.

A.



B.

C. This flow chart must be used only in Record Mode.



ELECTRICAL PARTS LIST

1. STANDARD PART NUMBER CODING

1-1. RESISTOR CODING

1. Fixed Resistor Coding

Type of Resistor	
C	Composition Resistor
D	Carbon Resistor
F	Fusible Resistor
K	Ceramic Resistor
N	Metal Film Resistor
S	Metal-Oxide Film Resistor
W	Wire Wound Resistor
X	Cement Resistor
Y	Chip Resistor

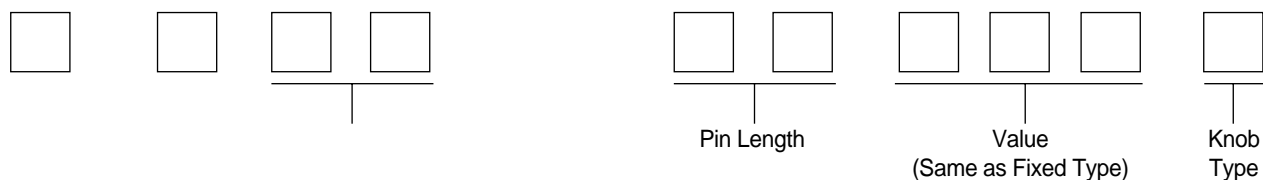
Type of Resistor	
Code	Wattage
-A	1/6w
-B	1/8W
-4	1/4W
-2	1/2W
01	1W
02	2W

Distance	
Code	Distance
A	2.5mm
B	5.0mm
C	7.5mm
D	10.0mm
E	12.5mm
F	15.0mm
G	17.5mm
H	20.0mm
G	17.5mm
H	20.0mm
J	22.5mm
K	25.0mm
X	Auto Insertion
Z	Auto Insertion

Value	
Example	
4780.47Ω
4794.7Ω
47047Ω
471470Ω
472472Ω
47347Ω

Tolerance	
Symbol	tolerance
F	±1%
G	±2%
J	±5%
K	±10%
M	±20%
N	±30%

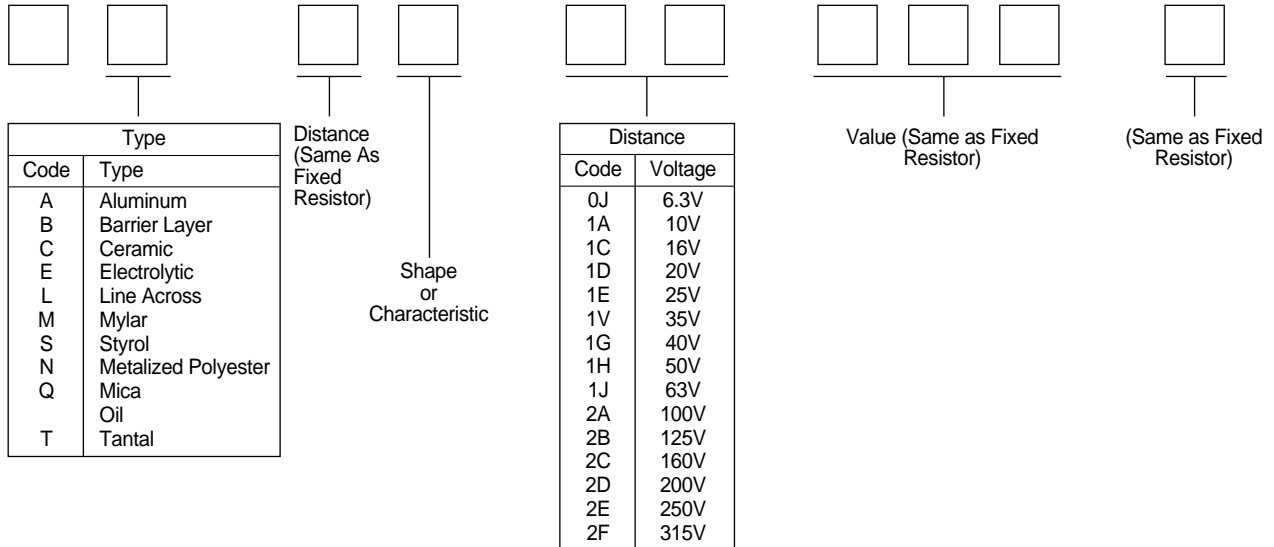
2. Semi-Fixed Resistor Coding



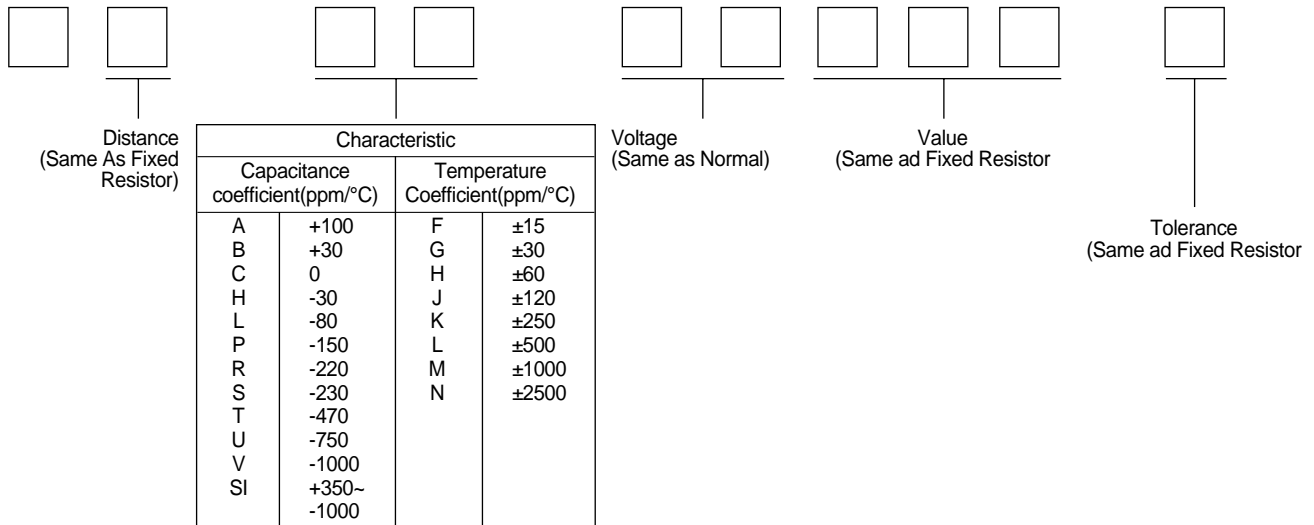
Material		Shape	Knob	Code	
CARBON FILM	1	VERTICAL	WITH	1	11
			WITHOUT	2	12
		HORIZONTAL	WITH	3	13
			WITHOUT	4	14
METAL GRAZE	5	VERTICAL	WITH	1	21
			WITHOUT	2	22
		HORIZONTAL	WITH	3	23
			WITHOUT	4	24
CARBON SOLID	5	VERTICAL	WITH	1	51
			WITHOUT	2	52
		HORIZONTAL	WITH	3	53
			WITHOUT	4	54
CERMIET	6	VERTICAL	WITH	1	61
			WITHOUT	2	62
		HORIZONTAL	WITH	3	63
			WITHOUT	4	64

1-2. CAPACITOR CODING

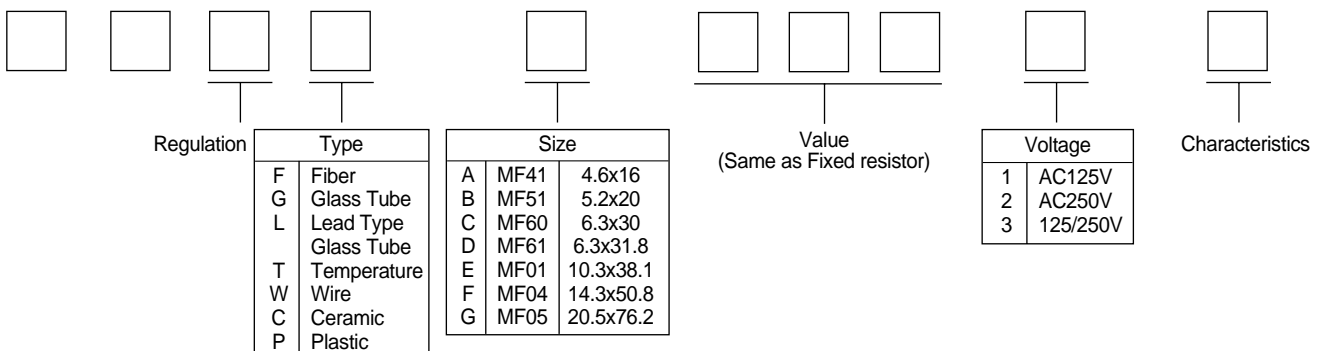
1. Normal



2. Temperature Compensation



1-3. FUSE CODING



✍ **CAUTION** In this Service Manual, some parts can be changed for improving their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List)in Service information Center(<http://svc.dwe.co.kr>)

2.PARTS LIST

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
13100	58G0000078	COIL DEGAUSSING	DC-1400	DVN-20F6N
	58G0000079	COIL DEGAUSSING	DC-2000	
13200	48519A4610	CRT GROUND AS	1401H-1015-1P	DVN-20F6N
	48519A5010	CRT GROUND AS	2001H-1015-1P	
V901A	48A96414N1	CRT BARE	A34JLL40X	DVN-20F6N
	48A96420N1	CRT BARE	A48JLL40X	
00010	58D1000046	COIL DY	ODY-M1401	DVN-20F6N
	58D1000045	COIL DY	ODY-M2002	
PA601	4850703S46	CONN AS	YH025-03+YST025+USW=400	
SP01	4858309110	SPEAKER	3W 8 OHM A30C-560	

CRT PCB

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859824613	PCB CRT	T1.6X70X90(197X305/2X4)	DVN-20F6N
C901	CCXB1H391K	C CERA	50V B 390PF K (TAPPING)	
C902	CCXB1H561K	C CERA	50V B 560PF K (TAPPING)	
C903	CCXB1H391K	C CERA	50V B 390PF K (TAPPING)	
C904	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C905	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C906	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C907	CCXB3D102K	C CERA	2KV B 1000PF K (TAPPING)	
C908	CEXF2E100C	C ELECTRO	250V RUS 10MF (10*20) TP	
D901	D1N4148—	DIODE	1N4148 (TAPPING)	
D902	D1N4148—	DIODE	1N4148 (TAPPING)	
D903	D1N4148—	DIODE	1N4148 (TAPPING)	
G4	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
PH502	4850703S18	CONN AS	YH025-03+YST025+ULW=200	
	4850703S19	CONN AS	YH025-03+YST025+ULW=300	
PH701	4850704S03	CONN AS	YH025-04+YST025+ULW=300	
	4850704S04	CONN AS	YH025-04+YST025+ULW=400	
Q901	TKTC3207—	TR	KTC3207	
Q902	TKTC3207—	TR	KTC3207	
Q903	TKTC3207—	TR	KTC3207	
R901	RS01Y153J-	R M-OXIDE FILM	1W 15K OHM J	
R902	RS01Y153J-	R M-OXIDE FILM	1W 15K OHM J	
R903	RS01Y153J-	R M-OXIDE FILM	1W 15K OHM J	
R904	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R905	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R906	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R910	RD-AZ121J-	R CARBON FILM	1/6 120 OHM J	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R911	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R912	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R913	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R914	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
R915	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
R916	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
R917	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R918	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R919	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
S901	5S40403035	SW LEVER	JRS-1301	
SK901	4859302430	SOCKET CRT	1SMM03	
VR901	RV4121201P	R SEMI FIXED	NVZ6THT 200 OHM	
VR902	RV4121201P	R SEMI FIXED	NVZ6THT 200 OHM	
VR903	RV4121502P	R SEMI FIXED	NVZ6THT 5K OHM	
VR904	RV4121502P	R SEMI FIXED	NVZ6THT 5K OHM	
VR905	RV4121502P	R SEMI FIXED	NVZ6THT 5K OHM	

POWER PCB

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859810311	PCB POWER	164.5X94.5(330X246/2X2)	
C301	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C302	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C304	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C305	CMXM2A104J	C MYLAR	100V 0.1MF J TP	
C307	CEXF1V471V	C ELECTRO	35V RSS 470MF (10X20) TP	
C308	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C309	CEXF1V102V	C ELECTRO	35V RSS 1000MF (13X25) TP	
C311	CEXF1V101V	C ELECTRO	35V RSS 100MF (8X11.5) TP	
C312	CMXL1H105J	C MYLAR	50V 1MF J (MEU)	
C313	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C401	CCXB2H221K	C CERA	500V B 220PF K (TAPPING)	
C403	CCXB3D271K	C CERA	2KV B 270PF K (T)	
C404	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C405	CCYB2H103K	C CERA	500V B 0.01MF K	
C407	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C408	CEXF2E479V	C ELECTRO	250V RSS 4.7MF (10X16)TP	
C409	CEXF2C479V	C ELECTRO	160V RSS 4.7MF (8X16) TP	
C412	CMYH3C602J	C MYLAR	1.6KV 6000PF J (BUP)	⚠
	CMYH3C622J	C MYLAR	1.6KV 6200PF J (BUP)	⚠ DVN-20F6N
C413	CMYB2D334J	C MYLAR	200V 0.33MF J (EU)	⚠
	CMYB2D514J	C MYLAR	200V 0.51MF J (EU)	⚠ DVN-20F6N
C414	CMXM2A104J	C MYLAR	100V 0.1MF J TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
C816	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	<div>⚠</div> <div>⚠ DVN-20F6N</div> <div>DVN-20F6N</div> <div>DVN-20F6N</div> <div>DVN-20F6N</div> <div>⚠</div> <div>⚠</div> <div>⚠</div>
C818	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
C821	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
D301	DBYV95C—	DIODE	BYV95C (TAPPING)	
D302	D1N4003—	DIODE	1N4003 (TAPPING)	
D401	DBYV95C—	DIODE	BYV95C (TAPPING)	
D402	D1N4003—	DIODE	1N4003 (TAPPING)	
D404	DBYV95C—	DIODE	BYV95C (TAPPING)	
I301	1TA8445K—	IC	TA8445K	
I301A	4857027103	HEAT SINK	ETSD T1.0	
I301B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN	
L301	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L401	58C0000026	COIL BEAD	HC-4035	
L402	58H0000019	COIL H-LINEARITY	L-178	
	58H0000020	COIL H-LINEARITY	L-76(76.5UH)	
L403	58C9430599	COIL CHOKE	AZ-9004Y(94MH)	
P401	4859240020	CONN WAFER	YFW500-05	
P402	485923162S	CONN WAFER	YW025-03 (STICK)	
PA403	4850709S02	CONN AS	YH025-09+YST025+ULW=300	
	4850709S03	CONN AS	YH025-09+YST025+ULW=400	
PA803	4850702S15	CONN AS	YPH500-02+YLT500+ULW=300	
	4850702S03	CONN AS	YPH500-02+YLT500+ULW=400	
PA804	4850701S06	CONN AS	YFH800-01+YPT018+ULW=300	
	4850701S09	CONN AS	YFH800-01+YPT018+ULW=400	
Q301	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q401	TKTC3207 —	TR	KTC3207	
Q402	T2SD2499 —	TR	2SD2499	
Q802	TKSA1013Y-	TR	KSA1013Y	
Q803	TKTC3207 —	TR	KTC3207	
Q804	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
R301	RF01Y369J-	R FUSIBLE	1W 3.6 OHM J	
R302	RD-2Z229J-	R CARBON FILM	1/2 2.2 OHM J	
R303	RS01Y331J-	R M-OXIDE FILM	1W 330 OHM J	
R304	RV4121103P	R SEMI FIXED	NVZ6THT 10K OHM	
R305	RV4121202P	R SEMI FIXED	NVZ6THT 2K OHM	
R306	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R309	RD-4Z822J-	R CARBON FILM	1/4 8.2K OHM J	
R310	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R311	RD-4Z822J-	R CARBON FILM	1/4 8.2K OHM J	
R312	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R313	RD-4Z563J-	R CARBON FILM	1/4 56K OHM J	
R314	RD-4Z473J-	R CARBON FILM	1/4 47K OHM J	
R315	RD-2Z391J-	R CARBON FILM	1/2 390 OHM J	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R316	RD-2Z102J-	R CARBON FILM	1/2 1K OHM J	DVN-20F6N
R402	RF01Y369J-	R FUSIBLE	1W 3.6 OHM J	
	RF01Y479J-	R FUSIBLE	1W 4.7 OHM J	
R403	RF01Y479J-	R FUSIBLE	1W 4.7 OHM J	
R405	RS02Y560JS	R M-OXIDE FILM	2W 56 OHM J SMALL	
R406	RS01Y272J-	R M-OXIDE FILM	1W 2.7K OHM J	
R407	RS01Y562J-	R M-OXIDE FILM	1W 5.6K OHM J	
R408	RD-4Z270J-	R CARBON FILM	1/4 27 OHM J	
R409	RN-4Z2402F	R METAL FILM	1/4 24K OHM F	
R410	RN-4Z2402F	R METAL FILM	1/4 24K OHM F	
	RN-4Z2202F	R METAL FILM	1/4 22K OHM F	DVN-20F6N
R411	RD-2Z104J-	R CARBON FILM	1/2 100K OHM J	DVN-20F6N
	RD-2Z134J-	R CARBON FILM	1/2 130K OHM J	
R412	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	⚠
R413	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R414	RD-4Z562J-	R CARBON FILM	1/4 5.6K OHM J	
R415	RD-2Z224J-	R CARBON FILM	1/2 220K OHM J	
R416	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R820	RD-4Z104J-	R CARBON FILM	1/4 100K OHM J	
R821	RS03Y362JS	R M-OXIDE FILM	3W 3.6K OHM J SMALL	
R822	RS03Y362JS	R M-OXIDE FILM	3W 3.6K OHM J SMALL	
R823	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J	
R826	RD-4Z104J-	R CARBON FILM	1/4 100K OHM J	
R834	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J	⚠
T401	50D0000022	TRANS DRIVE	HD-15D	
T402	50H0000178	FBT	1403SPND	

Y/C PCB

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859804324	PCB Y/C	145X85.5(330X197/4) D	
CCY02	HCQK201JCA	C CHIP CERA	50V CH 200PF J 2012	
CCY03	HCQK300JCA	C CHIP CERA	50V CH 30PF J 2012	
CCY04	HCQK391JCA	C CHIP CERA	50V CH 390PF J 2012	
CCY05	HCQK309CCA	C CHIP CERA	50V CH 3PF C 2012	
CCY09	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CCY10	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY13	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY16	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CCY18	HCQK300JCA	C CHIP CERA	50V CH 30PF J 2012	
CCY20	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY21	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012	
CCY22	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY24	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CCY26	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY27	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY28	HCQK390JCA	C CHIP CERA	50V CH 39PF J 2012	
CCY29	HCQK680JCA	C CHIP CERA	50V CH 68PF J 2012	
CCY30	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY32	HCQK821JCA	C CHIP CERA	50V CH 820PF J 2012	
CCY33	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCY35	HCQK100DCA	C CHIP CERA	50V CH 10PF D 2012	
CCY36	HCQK270JCA	C CHIP CERA	50V CH 27PF J 2012	
CCY39	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY40	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY43	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY44	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY45	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY47	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY48	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CCY49	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CCY50	HCQK390JCA	C CHIP CERA	50V CH 39PF J 2012	
CCY51	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY52	HCQK470JCA	C CHIP CERA	50V CH 47PF J 2012	
CCY55	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY56	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY57	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY58	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY59	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY61	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY63	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY64	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CCY65	HCQK809DCA	C CHIP CERA	50V CH 8PF D 2012	
CCY67	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY68	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY69	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY91	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY92	HCQK100DCA	C CHIP CERA	50V CH 10PF D 2012	
CCY93	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CY01	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY06	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY07	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY08	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY12	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY14	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY15	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY17	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CY19	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY23	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY25	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CY31	CEXF1C101A	C ELECTRO	16V RSM 100MF (6.3X7) TP	
CY37	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY38	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CY41	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY42	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY46	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY54	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY60	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY62	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP	
CY89	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CY90	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
DLY01	58Q0000081	COIL DELAY LINE	SD-11N1C-AVCR	
DY01	D1N4148—	DIODE	1N4148 (TAPPING)	
DY02	D1N4148—	DIODE	1N4148 (TAPPING)	
DY03	D1N4148—	DIODE	1N4148 (TAPPING)	
DY04	D1N4148—	DIODE	1N4148 (TAPPING)	
DY05	D1N4148—	DIODE	1N4148 (TAPPING)	
DY11	D1N4148—	DIODE	1N4148 (TAPPING)	
DY12	D1N4148—	DIODE	1N4148 (TAPPING)	
IY01	1LA7423A—	IC VIDEO	LA7423A Y/C 1CHIP (NTSC)	
IY02	1LC89960—	IC VIDEO	LC89960 1H CCD (NTSC)	
IY03	1LA7411—	IC PREAMP	LA7411 2CH PRE/REC AMP	
LY01	5CPZ180K02	COIL PEAKING	18UH K (AXIAL 3.5MM)	
LY03	5CPZ390K02	COIL PEAKING	39UH K (AXIAL 3.5MM)	
LY04	5CPZ220K02	COIL PEAKING	22UH K (AXIAL 3.5MM)	
LY05	5CPZ680K02	COIL PEAKING	68UH K (AXIAL 3.5MM)	
LY07	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
LY09	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
LY10	5CPZ270K02	COIL PEAKING	27UH K (AXIAL 3.5MM)	
LY15	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LY16	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LY17	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LY18	5CPZ101K02	COIL PEAKING	100UH K (AXIAL 3.5MM)	
LY30	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
LY31	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
PAY01	4859231710	CONN HOUSING	BH254-08	
PAY02	4859232310	CONN HOUSING	BH254-14	
PAY04	4859245710	CONN HOUSING	00-8370-041-000-800	
PY05	4859271421	CONN WAFER	00-8283-0511-00000 ANGLE	
PY09	4859271521	CONN WAFER	00-8283-0611-00000 ANGLE	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
QY01	TKTA1266Y-	TR	KTA1266Y	
QY02	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY03	TKTA1266Y-	TR	KTA1266Y	
QY04	TKTA1266Y-	TR	KTA1266Y	
QY05	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY06	TKTA1266Y-	TR	KTA1266Y	
QY07	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY08	TKTA1266Y-	TR	KTA1266Y	
QY09	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY10	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
RCJ01	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ02	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ03	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ10	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ11	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ12	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCY02	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCY03	HRFT132JCA	R CHIP	1/10 1.3K OHM J 2012	
RCY04	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCY05	HRFT681JCA	R CHIP	1/10 680 OHM J 2012	
RCY06	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012	
RCY07	HRFT182JCA	R CHIP	1/10 1.8K OHM J 2012	
RCY09	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCY11	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RCY12	HRFT391JCA	R CHIP	1/10 390 OHM J 2012	
RCY13	HRFT361JCA	R CHIP	1/10 360 OHM J 2012	
RCY14	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RCY15	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY17	HRFT182JCA	R CHIP	1/10 1.8K OHM J 2012	
RCY20	HRFT820JCA	R CHIP	1/10 82 OHM J	
RCY21	HRFT911JCA	R CHIP	1/10 910 OHM J 2012	
RCY23	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY24	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCY25	HRFT203JCA	R CHIP	1/10 20K OHM J 2012	
RCY26	HRFT823JCA	R CHIP	1/10 82K OHM J 2012	
RCY28	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RCY29	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCY30	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RCY31	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY32	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCY33	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCY36	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCY39	HRFT332JCA	R CHIP	1/10 3.3K OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RCY40	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RCY41	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY42	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RCY43	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RCY44	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY45	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCY46	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY48	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012	
RCY90	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCY92	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RY01	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
RY08	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RY10	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RY18	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
RY27	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RY34	RV4121102P	R SEMI FIXED	NVZ6THT 1K OHM	
RY35	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RY37	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
RY38	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J	
RY91	RV4121202P	R SEMI FIXED	NVZ6THT 2K OHM	
XY01	5XE3R5795B	CRYSTAL QUARTZ	HC-49/U 3.579545MHZ 15PPM	

PCB CONTROL

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859827814	PCB CONTROL	T1.6X280X68.6	
CQ01	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CQ03	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
CQ04	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CQ05	CEXF1C221V	C ELECTRO	16V RSS 220MF (8X11.5) TP	
DQ01	DKLR114L—	LED	KLR114L	
DQ02	DKLG114L—	LED	KLK-114L	
DQ03	DKLY114L—	LED	KLY 114-L (YELLOW)	
DQ04	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
DQ05	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
DQ06	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
DQ07	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM 9.1V	
DQ08	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM 9.1V	
DQ09	D1N4148—	DIODE	1N4148 (TAPPING)	
IQ01	1TFMW5380-	IC PREAMP	TFMW5380	
JP01	4859104940	JACK PHONO	YSC02P-4100-13A	
PA501	4850704S07	CONN AS	YH025-04+YST025+USW=600	
PAN03	4850710V02	CONN AS	YH025-10+YBNH250+ULW=100	
QQ01	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RQ01	RD-AZ161J-	R CARBON FILM	1/6 160 OHM J	
RQ02	RD-AZ161J-	R CARBON FILM	1/6 160 OHM J	
RQ03	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
RQ04	RD-AZ361J-	R CARBON FILM	1/6 360 OHM J	
RQ05	RD-AZ511J-	R CARBON FILM	1/6 510 OHM J	
RQ06	RD-AZ112J-	R CARBON FILM	1/6 1.1K OHM J	
RQ07	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
RQ08	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
RQ09	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RQ10	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RQ11	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
RQ12	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
RQ13	RD-AZ271J-	R CARBON FILM	1/6 270 OHM J	
RQ15	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RQ16	RD-AZ220J-	R CARBON FILM	1/6 22 OHM J	
RQ17	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RQ18	RD-AZ820J-	R CARBON FILM	1/6 82 OHM J	
RQ19	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RQ20	RD-AZ224J-	R CARBON FILM	1/6 220K OHM J	
RQ21	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
RQ22	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
SWQ01	5S50101090	SW TACT	SKHV17910A	
SWQ02	5S50202002	SW TACT	JTM-1108B 2C-2P	
SWQ03	5S50202002	SW TACT	JTM-1108B 2C-2P	
SWQ04	5S50101090	SW TACT	SKHV17910A	
SWQ05	5S50101090	SW TACT	SKHV17910A	
SWQ06	5S50101090	SW TACT	SKHV17910A	
SWQ07	5S50101090	SW TACT	SKHV17910A	
SWQ08	5S50101090	SW TACT	SKHV17910A	
SWQ09	5SN0101Z20	SW DETECT	JDS1105-6X	

PCB MAIN

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859808391	PCB MAIN	T1.6X330X240	
C103	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C104	CMXM2A472J	C MYLAR	100V 4700PF J TP	
C105	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C110	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C111	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP	
C113	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
C117	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C119	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C121	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
C123	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C126	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C128	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C130	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C501	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP	
C502	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C503	CMXM2A682J	C MYLAR	100V 6800PF J TP	
C504	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C505	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C506	CMXM2A182J	C MYLAR	100V 1800PF J TP	
C507	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C509	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C512	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C515	CEXD1H109F	C ELECTRO	50V RND 1MF (5X11) TP	
C518	CEXD1H109F	C ELECTRO	50V RND 1MF (5X11) TP	
C521	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C522	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C523	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C524	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C527	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C532	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C534	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C560	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C570	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C601	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C602	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C604	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP	
C605	CEXF1C331V	C ELECTRO	16V RSS 330MF (8X11.5) TP	
C606	CMXM2A104J	C MYLAR	100V 0.1MF J TP	
C607	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C609	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C706	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)	
C707	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C708	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C709	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C710	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C714	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C720	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)	
C723	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C724	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C726	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C728	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C730	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
C731	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C732	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C733	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C801	CL1UC3104M	C LINE ACROSS	WORLD AC250V 0.1UF M R.47	⚠
C802	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C803	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C804	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C805	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C806	CEYM2D331T	C ELECTRO	200V LWF 330MF (25X50)	⚠
C807	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	⚠
C808	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C809	CEXF2A100V	C ELECTRO	100V RSS 10MF (6.3X11) TP	⚠
C810	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP	
C811	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C812	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C813	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C814	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C815	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
C817	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C819	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
C820	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C822	CCXB1H152K	C CERA	50V B 1500PF K (TAPPING)	⚠
C823	CMYE2J222J	C MYLAR	630V PL 2200PF J	
C824	CH1BFE472M	C CERA AC	AC400V 4700PF M U/C/V	
C827	CCXB3D102K	C CERA	2KV B 1000PF K (TAPPING)	
C828	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)	
C829	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C840	CEXF1C101A	C ELECTRO	16V RSM 100MF (6.3X7) TP	
C845	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CC102	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC106	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC107	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC108	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC109	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC112	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC114	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC115	HCQK270JCA	C CHIP CERA	50V CH 27PF J 2012	
CC116	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC118	HCRK270JCA	C CHIP CERA	50V RH 27PF J 2012	
CC120	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC122	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC125	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC127	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CC129	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC131	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC132	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC133	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC134	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC510	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC511	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC513	HCQK431JCA	C CHIP CERA	50V CH 430PF J 2012	
CC514	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC516	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC517	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC519	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC520	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC525	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC526	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC528	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC529	HCQK470JCA	C CHIP CERA	50V CH 47PF J 2012	
CC530	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC531	HCQK820JCA	C CHIP CERA	50V CH 82PF J 2012	
CC533	HCQK681JCA	C CHIP CERA	50V CH 680PF J 2012	
CC536	HCQK151JCA	C CHIP CERA	50V CH 150PF J 2012	
CC540	HCQK151JCA	C CHIP CERA	50V CH 150PF J 2012	
CC603	HCQK681JCA	C CHIP CERA	50V CH 680PF J 2012	
CC608	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC701	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC702	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC703	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC704	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC711	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC712	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC713	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC715	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CC716	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC717	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC718	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CC719	HCQK561JCA	C CHIP CERA	50V CH 560PF J 2012	
CC721	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC722	HCQK201JCA	C CHIP CERA	50V CH 200PF J 2012	
CC725	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC727	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC729	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC734	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN06	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CCN09	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN11	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN13	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCN14	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCN15	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCN16	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN17	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN18	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN20	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN24	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CCN25	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CCN26	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN28	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN29	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN31	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN33	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN34	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN36	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN37	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN38	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN39	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN44	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CCN46	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN48	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN62	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN63	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCU01	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CCU02	HCBK272KCA	C CHIP CERA	X7R 50V 2700PF K 2012	
CCU04	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCU11	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCU12	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCU14	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCU15	HCBK153KCA	C CHIP CERA	50V X7R 0.015MF K 2012	
CCU19	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCU31	HCBK122KCA	C CHIP CERA	50V X7R 1200PF K 2012	
CN04	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
CN05	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CN07	CEXF1C100A	C ELECTRO	16V RSM 10MF 5X7	
CN08	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CN10	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CN21	CCXF1H223Z	C CERA	50V F 0.022MF Z (TAPPING)	
CN22	CCXF1H223Z	C CERA	50V F 0.022MF Z (TAPPING)	
CN23	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	








LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CN27	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)	
CN30	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CN32	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CN35	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CN40	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CN41	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CN42	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CN43	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
CN45	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CN47	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CN64	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CU01	CMXM2A153J	C MYLAR	100V 0.015MF J TP	
CU03	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CU05	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CU06	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
CU07	CMXM2A153J	C MYLAR	100V 0.015MF J TP	
CU09	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CU10	CEXF1C100A	C ELECTRO	16V RSM 10MF 5X7	
CU13	CEXF1C100A	C ELECTRO	16V RSM 10MF 5X7	
CU16	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
CU17	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CU18	CEXF1H339V	C ELECTRO	50V RSS 3.3MF (5X11) TP	
CU20	CMXM2A822J	C MYLAR	100V 8200PF J TP	
CU21	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CU22	CMXM2A472J	C MYLAR	100V 4700PF J TP	
CU23	CMXM2A682J	C MYLAR	100V 6800PF J TP	
CU24	CMXM2A473J	C MYLAR	100V 0.047MF J TP	
CU25	CCXB2H221K	C CERA	500V B 220PF K (TAPPING)	
CU26	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
CU27	CMXM2A473J	C MYLAR	100V 0.047MF J TP	
CU28	CMXM2A472J	C MYLAR	100V 4700PF J TP	
CU29	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
CU30	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
D102	DUZ5R1BM—	DIODE ZENER	UZ-5.1BM	
D103	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D104	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D105	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D106	1UPC574J—	IC	UPC574J	
D107	DUZ5R1BM—	DIODE ZENER	UZ-5.1BM	
D501	D1N4148—	DIODE	1N4148 (TAPPING)	
D502	D1N4148—	DIODE	1N4148 (TAPPING)	
D504	DUZ12BM—	DIODE ZENER	UZ-12BM (UNIZON)	
D505	D1N4148—	DIODE	1N4148 (TAPPING)	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
D506	D1N4148—	DIODE	1N4148 (TAPPING)	
D507	D1N4148—	DIODE	1N4148 (TAPPING)	
D508	D1N4148—	DIODE	1N4148 (TAPPING)	
D510	D1N4148—	DIODE	1N4148 (TAPPING)	
D511	D1N4148—	DIODE	1N4148 (TAPPING)	
D512	D1N4148—	DIODE	1N4148 (TAPPING)	
D513	D1N4148—	DIODE	1N4148 (TAPPING)	
D701	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D702	D1N4148—	DIODE	1N4148 (TAPPING)	
D703	D1N4003—	DIODE	1N4003 (TAPPING)	
D704	D1N4003—	DIODE	1N4003 (TAPPING)	
D707	D1N4148—	DIODE	1N4148 (TAPPING)	
D708	D1N4148—	DIODE	1N4148 (TAPPING)	
D801	D1N4148—	DIODE	1N4148 (TAPPING)	
D802	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D803	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D804	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D805	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D807	DBYV95C—	DIODE	BYV95C (TAPPING)	
D808	DBYV95C—	DIODE	BYV95C (TAPPING)	
D809	DBYV95C—	DIODE	BYV95C (TAPPING)	
D810	DBYV95C—	DIODE	BYV95C (TAPPING)	
D811	DBYV95C—	DIODE	BYV95C (TAPPING)	
D812	DBYV95C—	DIODE	BYV95C (TAPPING)	
D813	DBYW95C—	DIODE	BYW95C (TAPPING)	
D814	DBYW95C—	DIODE	BYW95C (TAPPING)	
D820	D1N4148—	DIODE	1N4148 (TAPPING)	
D821	D1N4148—	DIODE	1N4148 (TAPPING)	
DN01	D1N4148—	DIODE	1N4148 (TAPPING)	
DN02	D1N4148—	DIODE	1N4148 (TAPPING)	
DN03	D1N4148—	DIODE	1N4148 (TAPPING)	
DN06	D1N4003—	DIODE	1N4003 (TAPPING)	
DN07	D1N4003—	DIODE	1N4003 (TAPPING)	
DN13	DUZ6R2BM—	DIODE ZENER	UZ-6.2BM 6.2V	
DN15	D1N4148—	DIODE	1N4148 (TAPPING)	
DN17	DS15312H—	LED IR	SI5312-H	
DN24	D1N4003—	DIODE	1N4003 (TAPPING)	
DU01	D1N4148—	DIODE	1N4148 (TAPPING)	
DU02	D1N4148—	DIODE	1N4148 (TAPPING)	
DU03	D1N4148—	DIODE	1N4148 (TAPPING)	
F801	5F1GB4021M	FUSE GLASS TUBE	UL/CSA MF51 4A 125V NM	⚠
F801A	4857415001	CLIP FUSE	PFC5000-0702	
F801B	4857415001	CLIP FUSE	PFC5000-0702	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
I501	NM52335SP-	IC CHROMA	M52335SP-600	⚠
I502	1K1A7809P1	IC REGULATOR	K1A7809PI	
I502A	4857026900	HEAT SINK	AL EX	
I503	1TC4066BP-	IC	TC 4066BP	
I601	1KA2201N—	IC AMP	KA2201N	
I701	1M37267073	IC MICOM	M37267M6-101SP	
I702	124LC01B—	IC MEMORY	24LC01B	
I703	1MN1380L—	IC COMPARATOR(RESET)	MN1380-L(RESET IC)	
I801	1STRS5707-	IC POWER	STR-S5707	
I801A	4857025403	HEAT SINK	AL050P-H24 T=2	
I803	1K1A7806P1	IC REGULATOR	KIA7806PI	
I803A	4857027301	HEAT SINK	AL 6063S-T5	
I804	1PQ12RF11-	IC REGULATOR	PQ12RF11	
I805	1PQ12RF11-	IC REGULATOR	PQ12RF11	
I806	1K1A7809P1	IC REGULATOR	K1A7809PI	
IN01	1TMP913178	IC MICOM	TMP91C642AN-3178	
IN03	1KA4558—	IC AMP	KA4558	
IN05	1BA6209—	IC	BA6209	
IN06	1K1A7042P-	IC SWITCH	KIA7042P	
IN07	1SG239S—	IC SENSOR	SG-239S	
IU01	1BA7790LS-	IC AUDIO	BA7790LS	
L102	58B25R2S60	COIL PIF	TRF-0082(STICK)	
L103	58C5580019	COIL CHOKE	TRF-9225 (0.55UH)	
L104	5CPZ470K02	COIL PEAKING	47UH K (AXIAL 3.5MM)	
L105	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
L106	58C5580019	COIL CHOKE	TRF-9225 (0.55UH)	
L107	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
L108	58B0000S81	COIL PIF	TRF-4524 (STICK)	
L501	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
L502	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
L504	5CPZ569K02	COIL PEAKING	5.6UH K (AXIAL 3.5MM)	
L505	5CPZ829K02	COIL PEAKING	8.2UH K (AXIAL 3.5MM)	
L601	58S0000S41	COIL SIF	TRF-5004C(STICK)	⚠
L703	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L801	5PTLF472BE	FILTER LINE	TLF-472BE	
L803	5MC0000100	COIL BEAD	MD-5 (HC-3550)	
L804	58C0000090	COIL CHOKE	L-45S	
L805	58C0000090	COIL CHOKE	L-45S	
LN04	5CPZ101K02	COIL PEAKING	100UH K (AXIAL 3.5MM)	
LN05	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LN06	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LU01	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LU02	5CPX103J—	COIL PEAKING	10MH 5MM J RADIAL	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
LU03	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LU04	5CPX103J—	COIL PEAKING	10MH 5MM J RADIAL	
LU06	5800000027	COIL OSC	DE0-008	
P102	485923162S	CONN WAFER	YW025-03 (STICK)	
P403	485923522S	CONN WAFER	YW025-09 (STICK)	
P501	485923172S	CONN WAFER	YW025-04 (STICK)	
P504	485923172S	CONN WAFER	YW025-04 (STICK)	
P601	485923162S	CONN WAFER	YW025-03 (STICK)	
P602	485923162S	CONN WAFER	YW025-03 (STICK)	
P802	4859242220	CONN WAFER	YFW800-02	
P803	4859238620	CONN WAFER	YPW500-02	
P804	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
PAN04	4850707V03	CONN AS	60-8283-3078-45+ULW=100	
PAN05	4850706V10	CONN AS	60-8283-3068-45+UAW=150	
PAN06	4850702V07	CONN AS	BIC-02H-20T+USW=100	
PN03	4859235320	CONN WAFER	YW025-10	
PWC01	4859900321	CORD POWER	KKP-8W SPT-2#18AWG(ST)	
PY01	4859249420	CONN WAFER	YF254-08	
PY02	4859250020	CONN WAFER	YF254-14	
PY03	4859278220	CONN WAFER	TKC-G10P-A1	
PY04	4859278120	CONN WAFER	TKC-G06P-A1	
Q101	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q102	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q103	TKTC3197—	TR	KTC 3197	
Q104	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q105	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q106	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q502	TKTA1266Y-	TR	KTA1266Y	
Q503	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q504	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q505	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q507	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q510	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q520	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q521	TKTA1266Y-	TR	KTA1266Y	
Q522	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q701	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q702	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q704	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q705	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q706	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q801	TKTC3203Y-	TR	KTC3203-Y	
Q805	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
Q806	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QN03	TKTA1266Y-	TR	KTA1266Y	
QN04	TKTA1266Y-	TR	KTA1266Y	
QN05	TKTA1266Y-	TR	KTA1266Y	
QN06	TKTA1266Y-	TR	KTA1266Y	
QN07	TKTA1266Y-	TR	KTA1266Y	
QN08	TKTA1266Y-	TR	KTA1266Y	
QN09	TKTA1266Y-	TR	KTA1266Y	
QN11	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QU01	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QU02	TKTA1266Y-	TR	KTA1266Y	
QU03	TKTC3197—	TR	KTC 3197	
QU05	TKTC3202Y-	TR	KTC3202Y	
R106	RV5426472P	R SEMI FIXED	RH0638C 4.7K OHM B	
R109	RS02Z121JS	R M-OXIDE FILM	2W 120 OHM J SMALL	
R118	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R123	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R124	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R126	RS01Z750J-	R M-OXIDE FILM	1W 75 OHM J (TAPPING)	
R503	DR320K—	THERMISTOR	R-320K	
R504	RV5426472P	R SEMI FIXED	RH0638C 4.7K OHM B	
R507	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	
R524	RD-4Z241J-	R CARBON FILM	1/4 240 OHM J	
R525	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R528	RD-AZ683J-	R CARBON FILM	1/6 68K OHM J	
R530	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R536	RD-AZ184J-	R CARBON FILM	1/6 180K OHM J	
R538	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R547	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
R549	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R551	RD-AZ184J-	R CARBON FILM	1/6 180K OHM J	
R570	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
R572	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
R604	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
R606	RD-4Z109J-	R CARBON FILM	1/4 1 OHM J	
R607	RD-4Z560J-	R CARBON FILM	1/4 56 OHM J	
R701	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R702	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R703	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R704	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R707	RD-AZ562J-	R CARBON FILM	1/6 5.6K OHM J	
R712	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R714	RD-AZ622J-	R CARBON FILM	1/6 6.2K OHM J	


LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R719	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	      
R723	RD-AZ272J-	R CARBON FILM	1/6 2.7K OHM J	
R724	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	
R725	RD-AZ273J-	R CARBON FILM	1/6 27K OHM J	
R726	RD-AZ432J-	R CARBON FILM	1/6 4.3K OHM J	
R727	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R746	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
R747	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J	
R750	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R754	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R756	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R766	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R801	DEC7R0M140	POSISTOR	ECPAC7R0M140	
R803	RX07B109JN	R CEMENT	7W 1 OHM J BENCH 4P	
R804	RC-2Z225J-	R CARBON COMP	1/2 2.2M OHM J	
R805	RS02Z153JS	R M-OXIDE FILM	2W 15K OHM J SMALL	
R806	RS02Z363JS	R M-OXIDE FILM	2W 36K OHM J SMALL	
R807	RS01Z180J-	R M-OXIDE FILM	1W 18 OHM J (TAPPING)	
R808	RS01Z473J-	R M-OXIDE FILM	1W 47K OHM J (TAPPING)	
R809	RF02Z278J-	R FUSIBLE	2W 0.27 OHM J (TAPPING)	
R812	RD-2Z124J-	R CARBON FILM	1/2 120K OHM J	
R813	RD-4Z104J-	R CARBON FILM	1/4 100K OHM J	
R814	RD-4Z680J-	R CARBON FILM	1/4 68 OHM J	
R815	RD-4Z182J-	R CARBON FILM	1/4 1.8K OHM J	
R816	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R819	RD-4Z229J-	R CARBON FILM	1/4 2.2 OHM J	
R824	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R825	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R827	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R828	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R829	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R830	RS02Z759JS	R M-OXIDE FILM	2W 7.5 OHM J SMALL	DVN-20F6N
R831	RS02Z759JS	R M-OXIDE FILM	2W 7.5 OHM J SMALL	
R832	RD-4Z241J-	R CARBON FILM	1/4 240 OHM J	
	RD-4Z200J-	R CARBON FILM	1/4 200 OHM J	
R833	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
RC102	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC103	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC104	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC105	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC107	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC108	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC110	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC112	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RC113	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC114	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RC115	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC116	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC117	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC119	HRFT563JCA	R CHIP	1/10 56K OHM J 2012	
RC121	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC122	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC125	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC127	HRFT124JCA	R CHIP	1/10 120K OHM J 2012	
RC128	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC129	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC132	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC133	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC134	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012	
RC135	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC136	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC137	HRFT474JCA	R CHIP	1/10 470K OHM J 2012	
RC140	HRFT330JCA	R CHIP	1/10 33 OHM J 2012	
RC141	HRFT120JCA	R CHIP	1/10 12 OHM J 2012	
RC142	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC143	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RC144	HRFT124JCA	R CHIP	1/10 120K OHM J 2012	
RC145	HRFT623JCA	R CHIP	1/10 62K OHM J 2012	
RC501	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC502	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC505	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC508	HRFT824JCA	R CHIP	1/10 820K OHM J 2012	
RC509	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC512	HRFT912JCA	R CHIP	1/10 9.1K OHM J 2012	
RC514	HRFT392JCA	R CHIP	1/10 3.9K OHM J 2012	
RC515	HRFT512JCA	R CHIP	1/10 5.1K OHM J 2012	
RC516	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC517	HRFT512JCA	R CHIP	1/10 5.1K OHM J 2012	
RC518	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC519	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC520	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC521	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC522	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC523	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC526	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC527	HRFT273JCA	R CHIP	1/10 27K OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC529	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	DVN-14F6N Only
RC531	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC532	HRFT393JCA	R CHIP	1/10 39K OHM J 2012	
RC533	HRFT333JCA	R CHIP	1/10 33K OHM J 2012	
RC534	HRFT333JCA	R CHIP	1/10 33K OHM J 2012	
RC535	HRFT474JCA	R CHIP	1/10 470K OHM J 2012	
RC537	HRFT395JCA	R CHIP	1/10 3.9M OHM J 2012	
RC539	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RC540	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC541	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC542	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC543	HRFT511JCA	R CHIP	1/10 510 OHM J 2012	
RC544	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC545	HRFT392JCA	R CHIP	1/10 3.9K OHM J 2012	
RC546	HRFT684JCA	R CHIP	1/10 680K OHM J 2012	
RC548	HRFT181JCA	R CHIP	1/10 180 OHM J 2012	
RC550	HRFT151JCA	R CHIP	1/10 150 OHM J 2012	
RC552	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC561	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC562	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC563	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC564	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RC565	HRFT273JCA	R CHIP	1/10 27K OHM J 2012	
RC566	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RC567	HRFT114JCA	R CHIP	1/10 110K OHM J 2012	
RC571	HRFT513JCA	R CHIP	1/10 51K OHM J 2012	
RC573	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC602	HRFT681JCA	R CHIP	1/10 680 OHM J 2012	
RC605	HRFT121JCA	R CHIP	1/10 120 OHM J 2012	
RC705	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC706	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC708	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC709	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC710	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC711	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC713	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RC715	HRFT332JCA	R CHIP	1/10 3.3K OHM J 2012	
RC716	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC717	HRFT512JCA	R CHIP	1/10 5.1K OHM J 2012	
RC718	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC720	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC721	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC722	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC730	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC731	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC732	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC733	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC738	HRFT106JCA	R CHIP	1/10 10M OHM J 2012	
RC739	HRFT334JCA	R CHIP	1/10 330K OHM J 2012	
RC740	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC741	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RC742	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC743	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC748	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC749	HRFT821JCA	R CHIP	1/10 820 OHM J 2012	
RC751	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC755	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC760	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC761	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC762	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC763	HRFT474JCA	R CHIP	1/10 470K OHM J 2012	
RC764	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC765	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC767	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC769	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC770	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC817	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCJ01	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ02	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ03	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ04	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ05	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ06	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ07	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ08	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ09	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ10	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ11	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ12	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ13	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ14	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ15	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ16	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ17	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ18	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ19	HRFT000-CA	R CHIP	1/10 0 OHM 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RCJ20	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCN06	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCN07	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RCN08	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012	
RCN09	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012	
RCN11	HRFT912JCA	R CHIP	1/10 9.1K OHM J 2012	
RCN12	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCN13	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCN14	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN15	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN18	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN20	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN22	HRFT332JCA	R CHIP	1/10 3.3K OHM J 2012	
RCN24	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCN25	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN31	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN32	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN33	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN35	HRFT201JCA	R CHIP	1/10 200 OHM J 2012	
RCN36	HRFT273JCA	R CHIP	1/10 27K OHM J 2012	
RCN40	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN44	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN47	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN49	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN51	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN56	HRFT274JCA	R CHIP	1/10 270K OHM J 2012	
RCN68	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN69	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN70	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RCN78	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCN80	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN82	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCN83	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN84	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN85	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN86	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN87	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN89	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RCU01	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RCU03	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RCU04	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCU05	HRFT183JCA	R CHIP	1/10 18K OHM J 2012	
RCU06	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RCU08	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU09	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCU10	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCU12	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RCU13	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU14	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU15	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU17	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RCU18	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012	
RCU19	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RCU20	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCU21	HRFT123JCA	R CHIP	1/10 12K OHM J 2012	
RCU22	HRFT334JCA	R CHIP	1/10 330K OHM J 2012	
RCU23	HRFT121JCA	R CHIP	1/10 120 OHM J 2012	
RCU26	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCU27	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RCU28	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RCU29	HRFT100JCA	R CHIP	1/10 10 OHM J 2012	
RCU30	HRFT100JCA	R CHIP	1/10 10 OHM J 2012	
RCU33	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RCU34	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RLY1	5SC0101328	SW RELAY	SDT-SS-112DM	
RN05	RD-AZ391J-	R CARBON FILM	1/6 390 OHM J	
RN10	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN16	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN17	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN19	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
RN21	RS02Z399JS	R M-OXIDE FILM	2W 3.9 OHM J SMALL	
RN27	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN28	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN29	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN34	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN37	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN38	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN39	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN43	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN44	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN45	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN46	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN48	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
RN50	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN53	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN54	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	

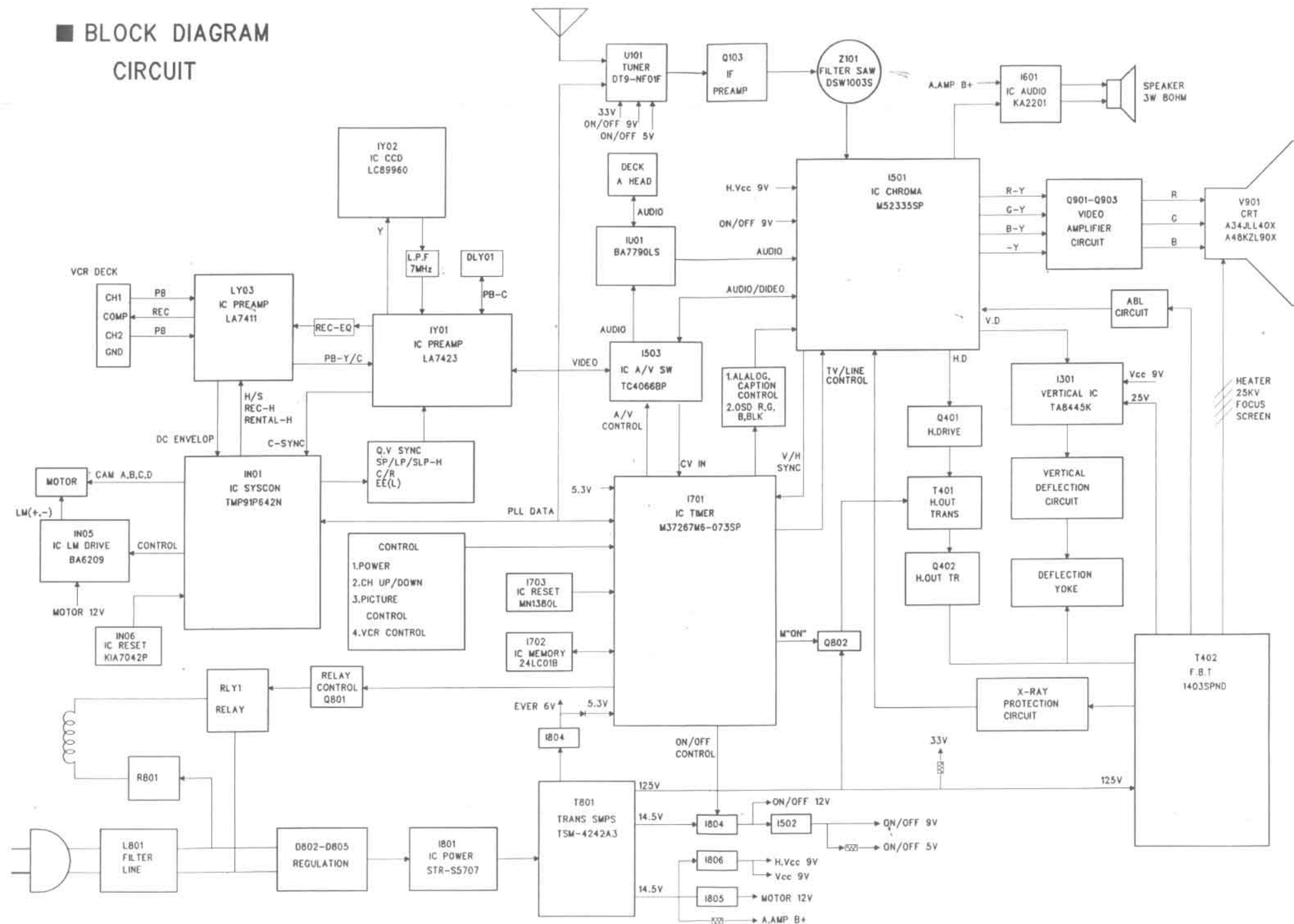
LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RN55	RD-AZ274J-	R CARBON FILM	1/6 270K OHM J	
RN57	RD-4Z151J-	R CARBON FILM	1/4 150 OHM J	
RN58	RD-4Z151J-	R CARBON FILM	1/4 150 OHM J	
RN60	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN61	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN62	RD-AZ273J-	R CARBON FILM	1/6 27K OHM J	
RN65	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN66	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J	
RN67	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J	
RN71	RN-AZ2001F	R METAL FILM	1/6 2.0K OHM F	
RN72	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
RN73	RN-AZ9101F	R METAL FILM	1/6 9.1K OHM F	
RN74	RN-AZ3901F	R METAL FILM	1/6 3.90K OHM F	
RN75	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN76	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	
RN77	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
RN79	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN81	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN90	RV5426473P	R SEMI FIXED	RH0638C 47K OHM B	
RN94	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN95	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN96	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN97	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN98	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN99	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RU02	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J	
RU07	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
RU11	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RU13	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
RU16	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
RU24	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
RU25	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RU31	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
RU32	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
RU57	RV5426204P	R SEMI FIXED	EVN-DJA A03 200K OHM B	
SN03	TST5811—	TR PHOTO	ST-5811	
SN04	TST5811—	TR PHOTO	ST-5811	
SW01	5SB0101166	SW TACT	KPT-1105A	
T801	50M4242A3-	TRANS SMPS	TSM-4242A3	
U101	4859715330	TUNER VARACTOR	DT9-NF03F	
X501	NCSB503F18	RESONATOR CERA	CSB503F18	
X502	5XEX3R579C	CRYSTAL QUARTZ	HC-49U 3.579545M 20PPM TA	
X701	5XYR03276C	CRYSTAL QUARTZ	S0-38 32.768000KHZ 20PPM	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
X702	5XE8R0000E	CRYSTAL QUARTZ	HC-49/U 8.000000MHZ 30PPM	⚠
XN01	5XE10R000E	CRYSTAL QUARTZ	HC-49/U 10.00000MHZ 30PPM	
Z101	5PDSW1003S	FILTER SAW	DSW 1003S	
Z102	5PXPS45MB-	FILTER CERA	TPS-4.5MB TRAP (TAPPING)	
Z103	5PXFSH4R5M	FILTER CERA	SFSH4.5MCB-TF21 TAPING	
Z801	DSVC271D14	VARISTOR	SVC271D14A	

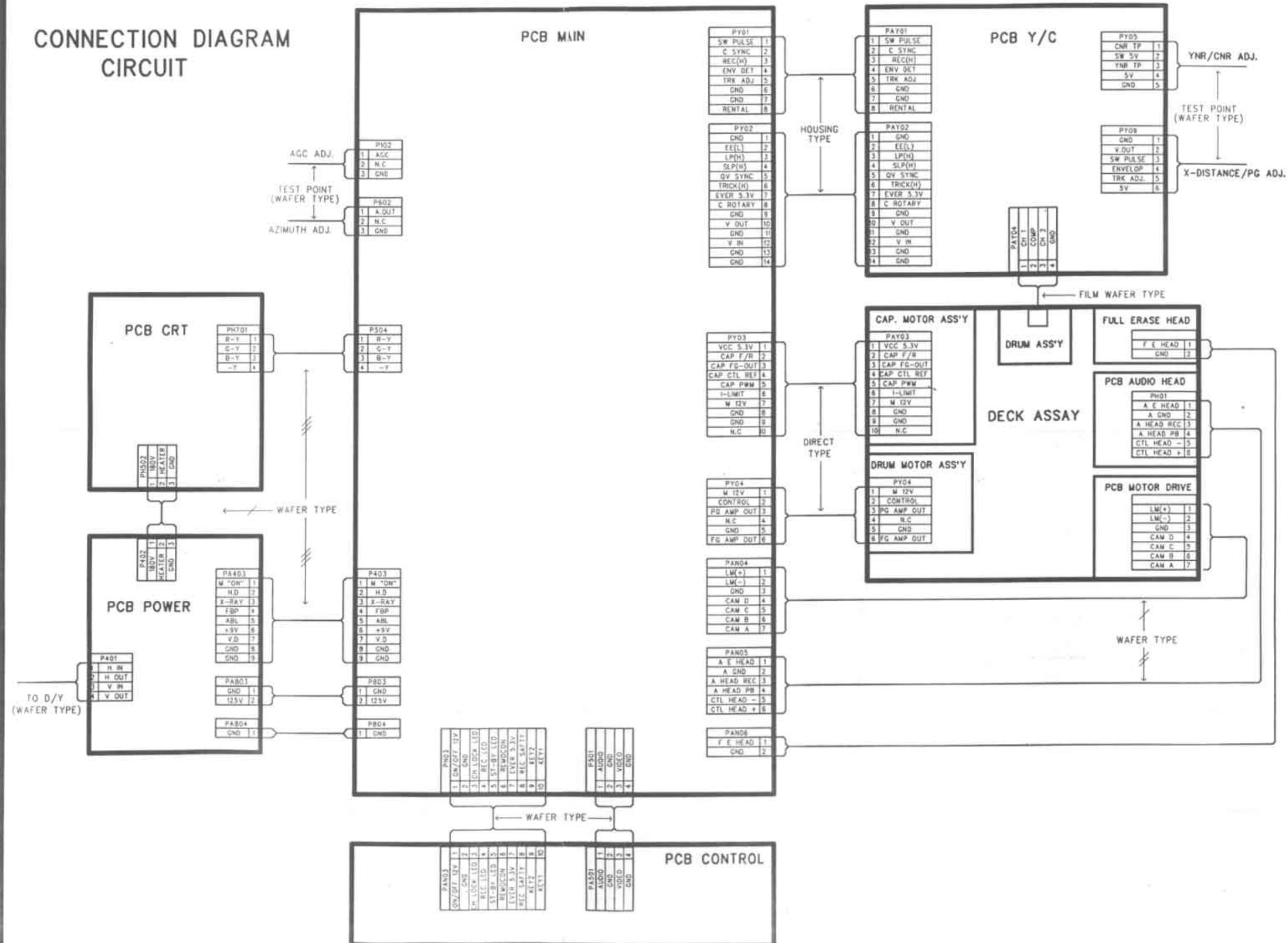



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance(servicing) instructions in the literature accompanying the appliance.


■ BLOCK DIAGRAM CIRCUIT





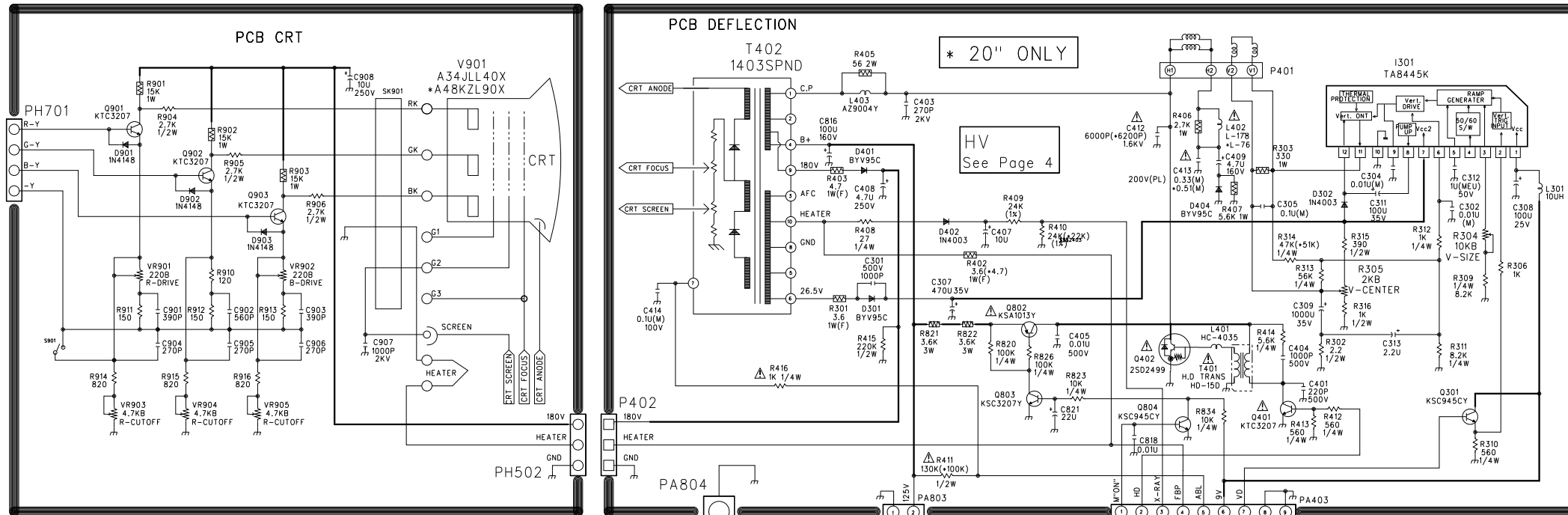
CONNECTION DIAGRAM CIRCUIT




The parts identified by  mark are critical for safety.
Replace only with the part number specified.

NOTE)  Warning
Parts that are shaded are critical
with respect to risk of fire and
electrical shock.

NOTE)  Symbol denotes AC ground
 Symbol denotes DC chassis ground



<1> CAUTION

THE COMPONENTS MARKED WITH  ON THE SCHEMATIC DIAGRAM
WITH HAVE SPECIAL CHARACTERISTICS
IMPORTANT FOR SAFETY AND SHOULD BE
REPLACED ONLY WITH TYPES IDENTICAL
TO THOSE IN ORIGINAL CIRCUIT OR
SPECIFIED IN THE PARTS LIST.
DO NOT DEGRADE THE SAFETY OF THE
RECEIVER THROUGH IMPROPER SERVICING

<2> WARNING

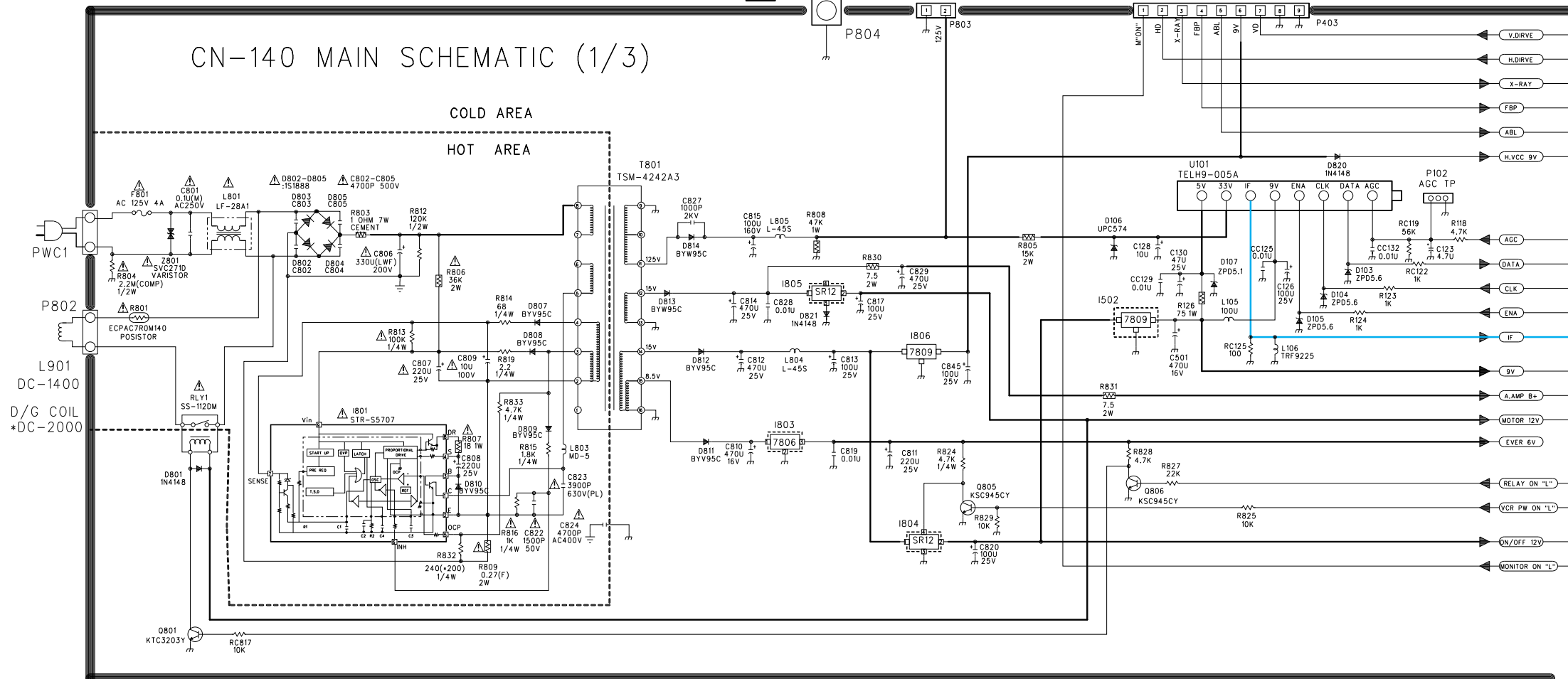
BEFOR SERVICING THIS CHASSIS
READ THE "X-RAY RADIATION",
"SAFETY PRECAUTION" AND "PRODUCT
SAFETY NOTICE" IN THE SERVICE MANUAL

<3> CAUTION TO THE SERVICE TECHNICIANS

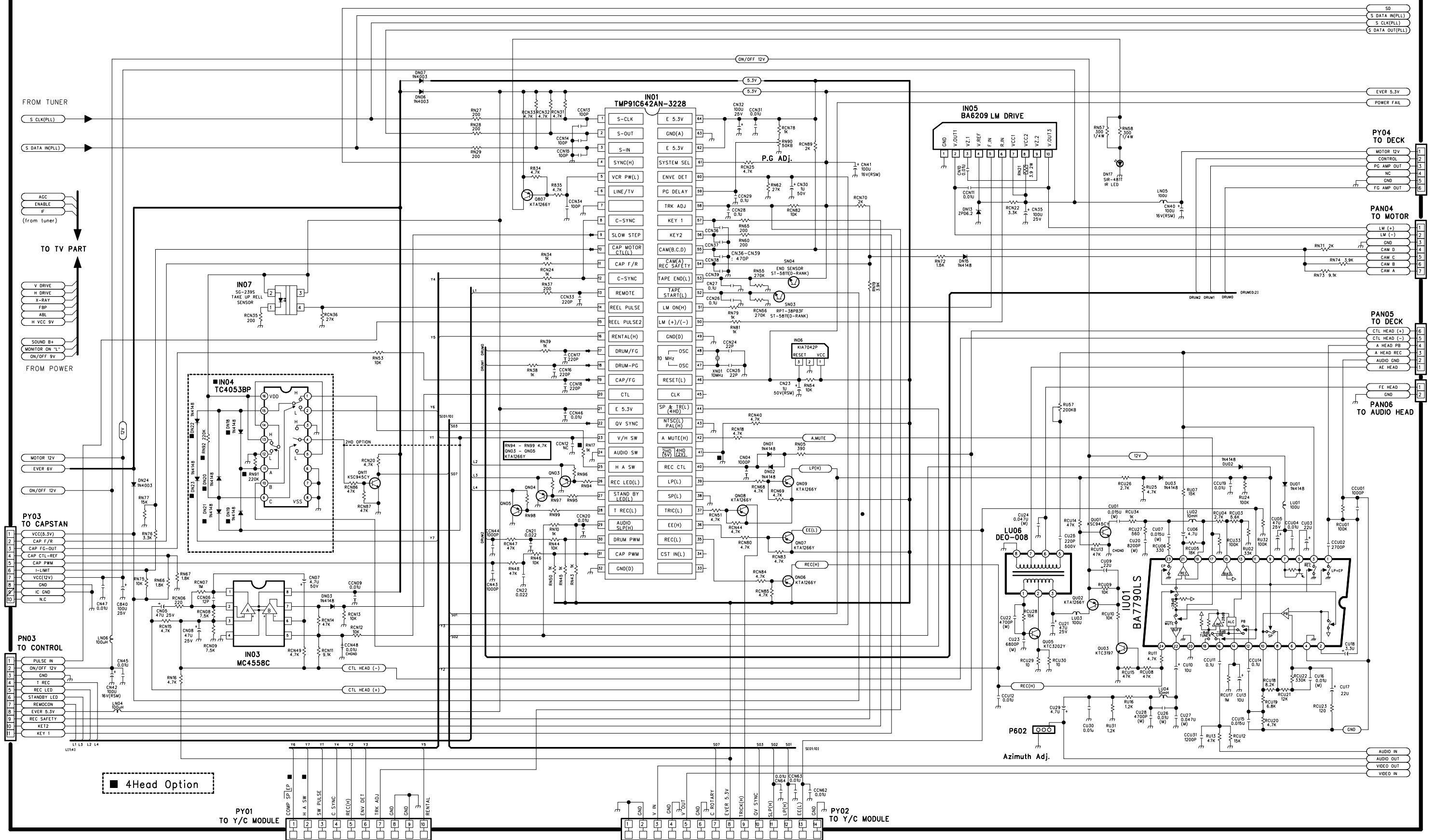
BEFORE RETURNING THE RECEIVER TO THE
CUSTOMER MAKE APPROPRIATE LEAKAGE
CURRENT OR RESISTANCE MEASUREMENTS
DETERMINE THAT EXPOSED PARTS ARE
ISOLATED.

<4> NOTES

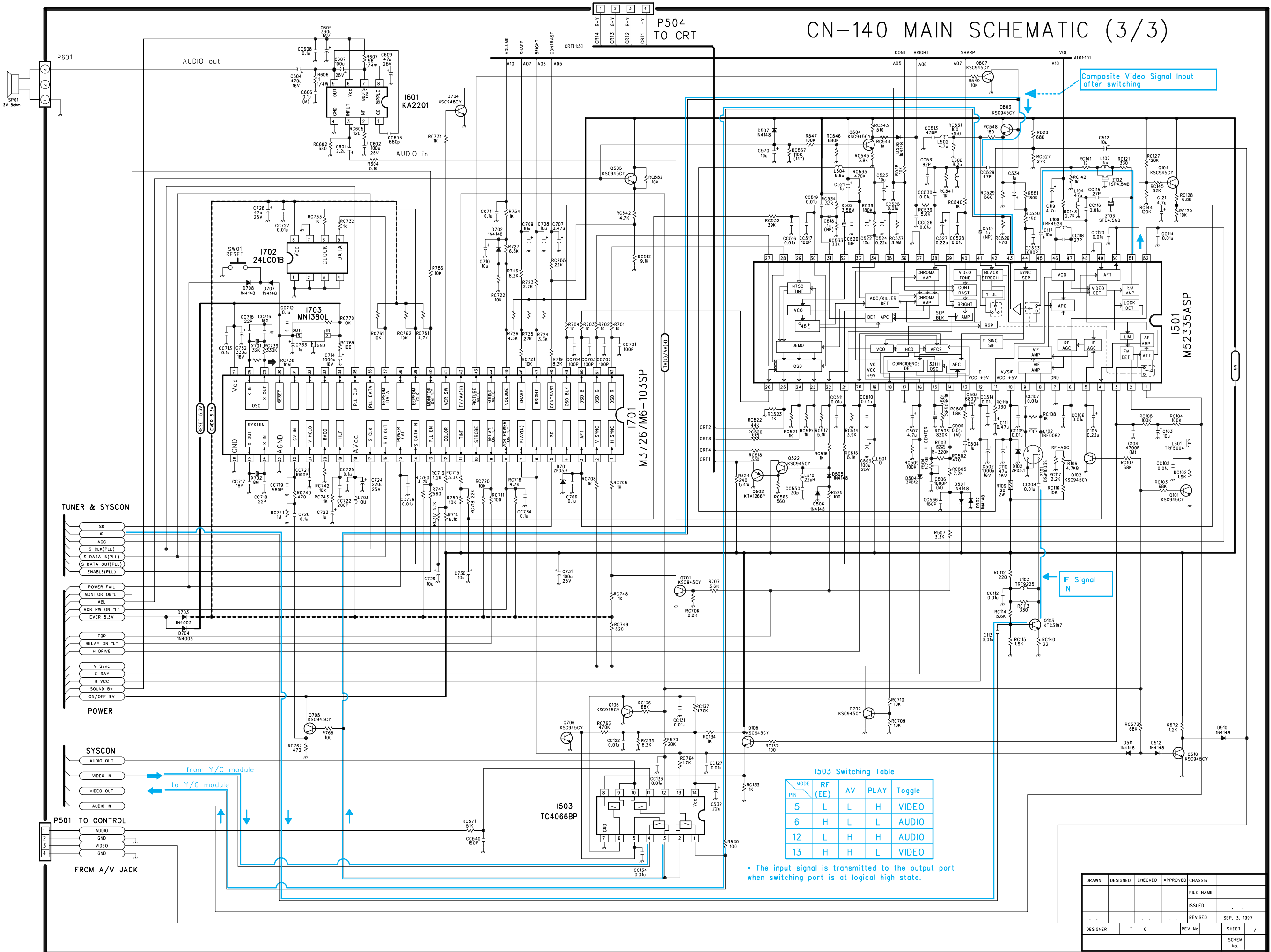
- RESISTANCE IS SHOWN IN OHM.
(K=1000, M=1000000)
- UNLESS OTHERWISE NOTED ON THE
SCHEMATIC ALL CAPACITOR VALUES
LESS THAN 1 ARE EXPRESSED IN μ F
AND THE VALUES MORE THAN 1 IN pF
- VOLTAGE READ WITH "V.T.V.M"
FROM POINT INDICATED TO CHASSIS
GROUND USING A COLOR BAR SIGNAL
WITH ALL CONTROLS AT NORMAL
LINE 120 VOLTS AC.
VOLTAGE READING SHOWN ARE NORMAL.
VALUES AND MAY VARY +20% EXCEPT H.V
- THIS CURCUIT DIAGRAM IS
A STANDRD ONE.
CIRCUITS PRINTED MAY BE
SUBJECT TO CHANGE FOR
PRODUCT IMPROVEMENT WITHOUT
PRIOR NOTICE.



CN-140 MAIN SCHEMATIC (2/3)



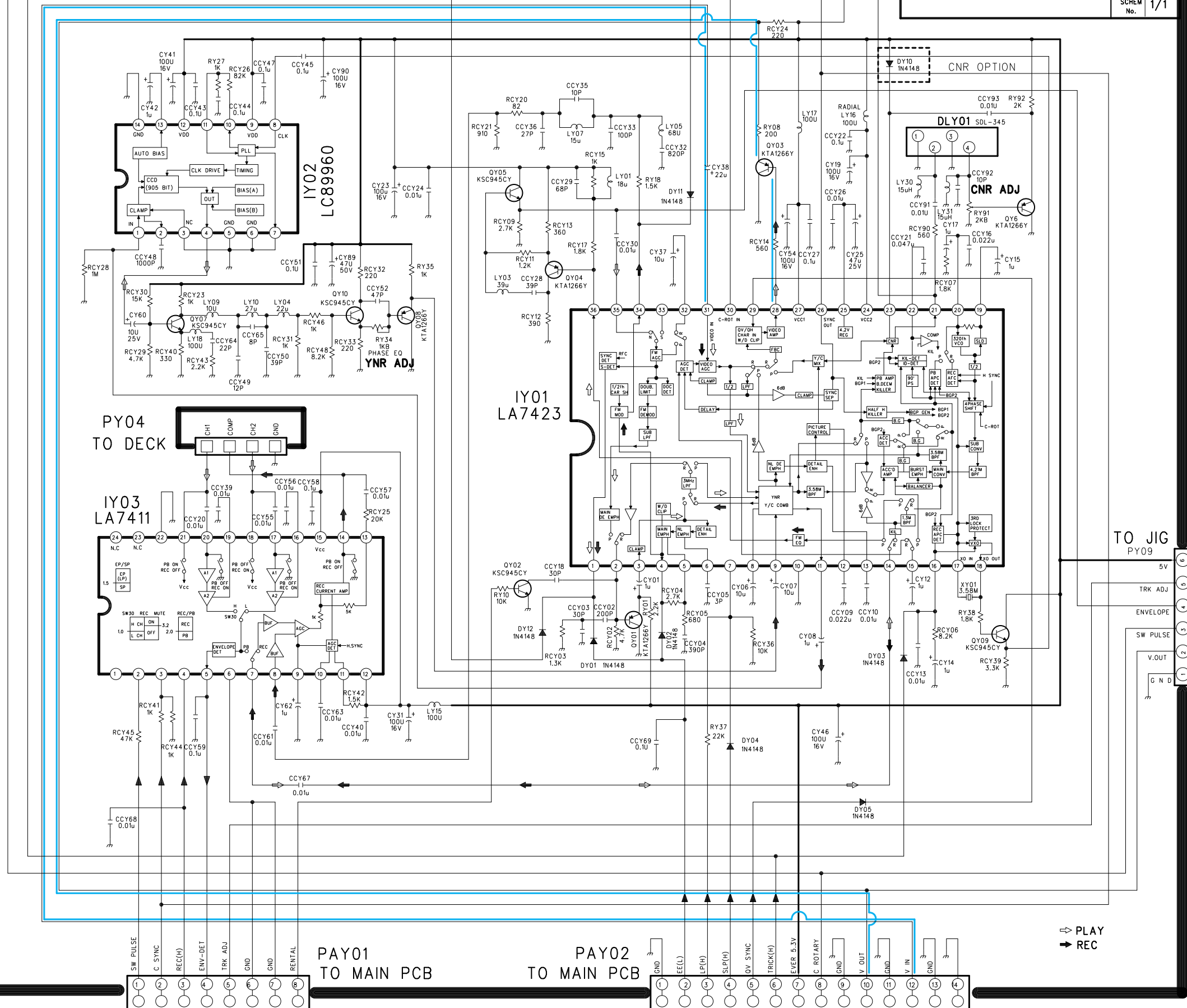
CN-140 MAIN SCHEMATIC (3/3)

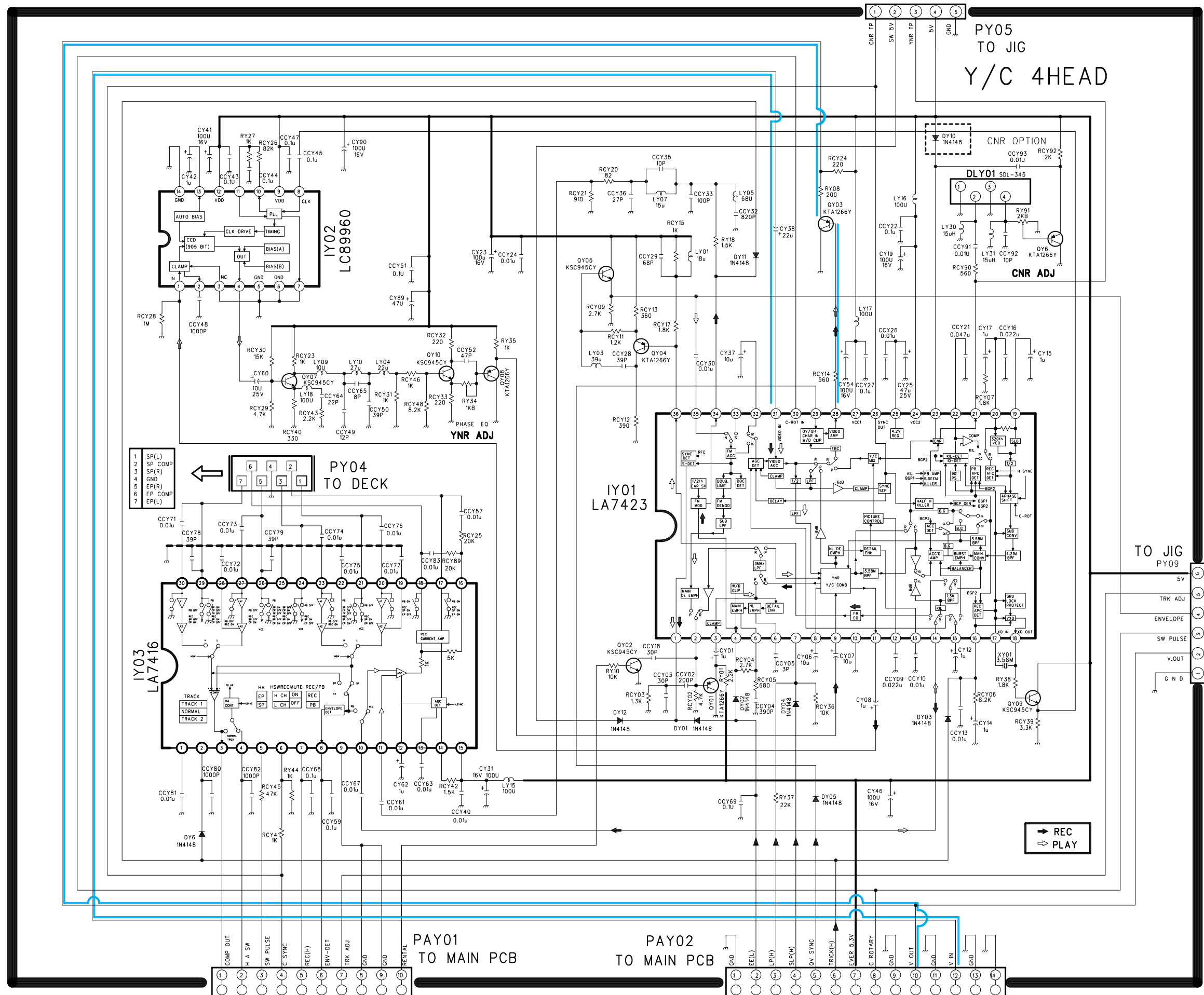


Y/C 2HEAD

PY05
TO JIG

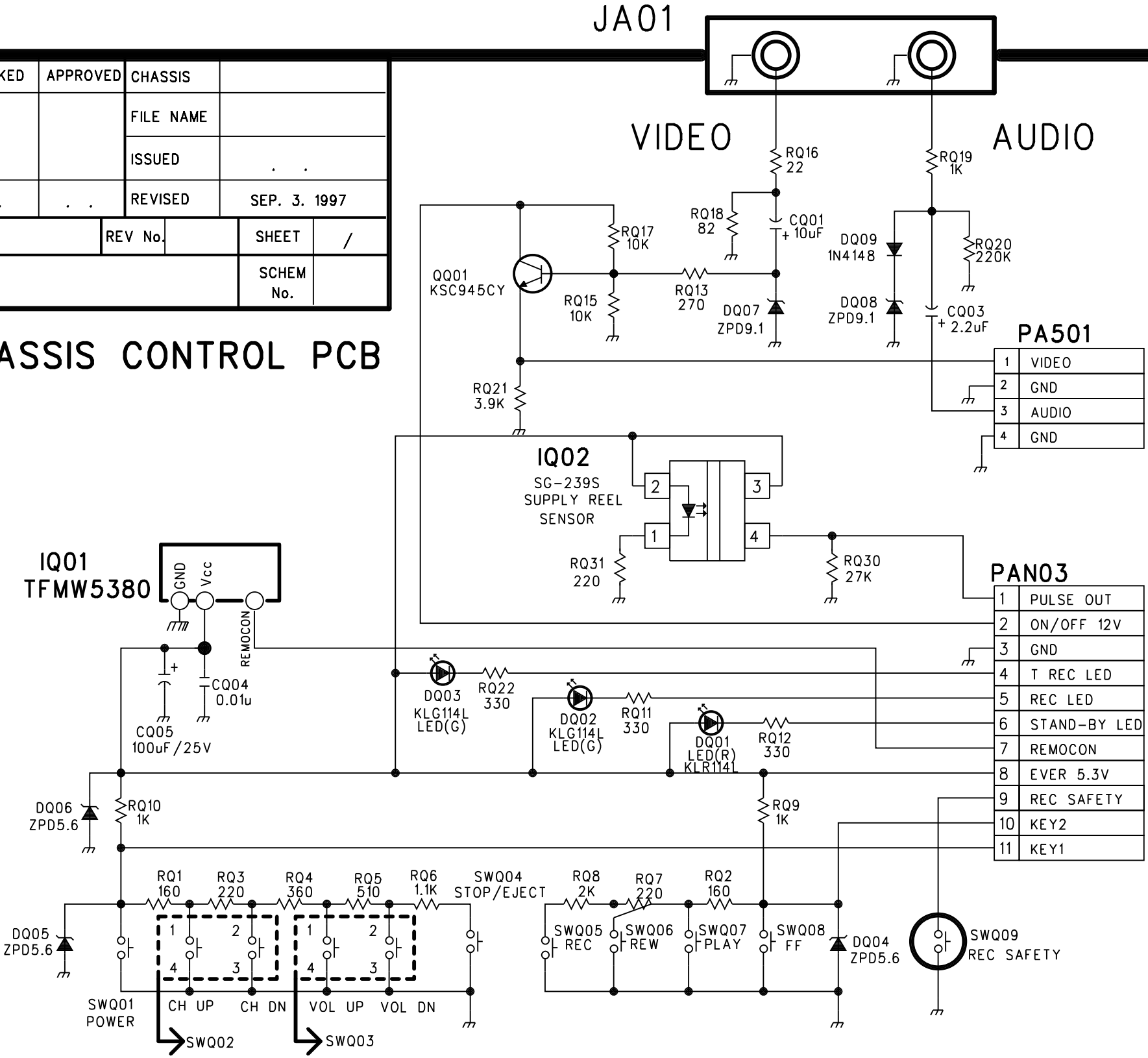
DRAWN	DESIGNED	CHECKED	APPROVED	CHASSIS
				FILE NAME
				ISSUED
				REVISED
DESIGNER	JO Y-P.	REV No.	SHEET	SCHEM No.
				1/1



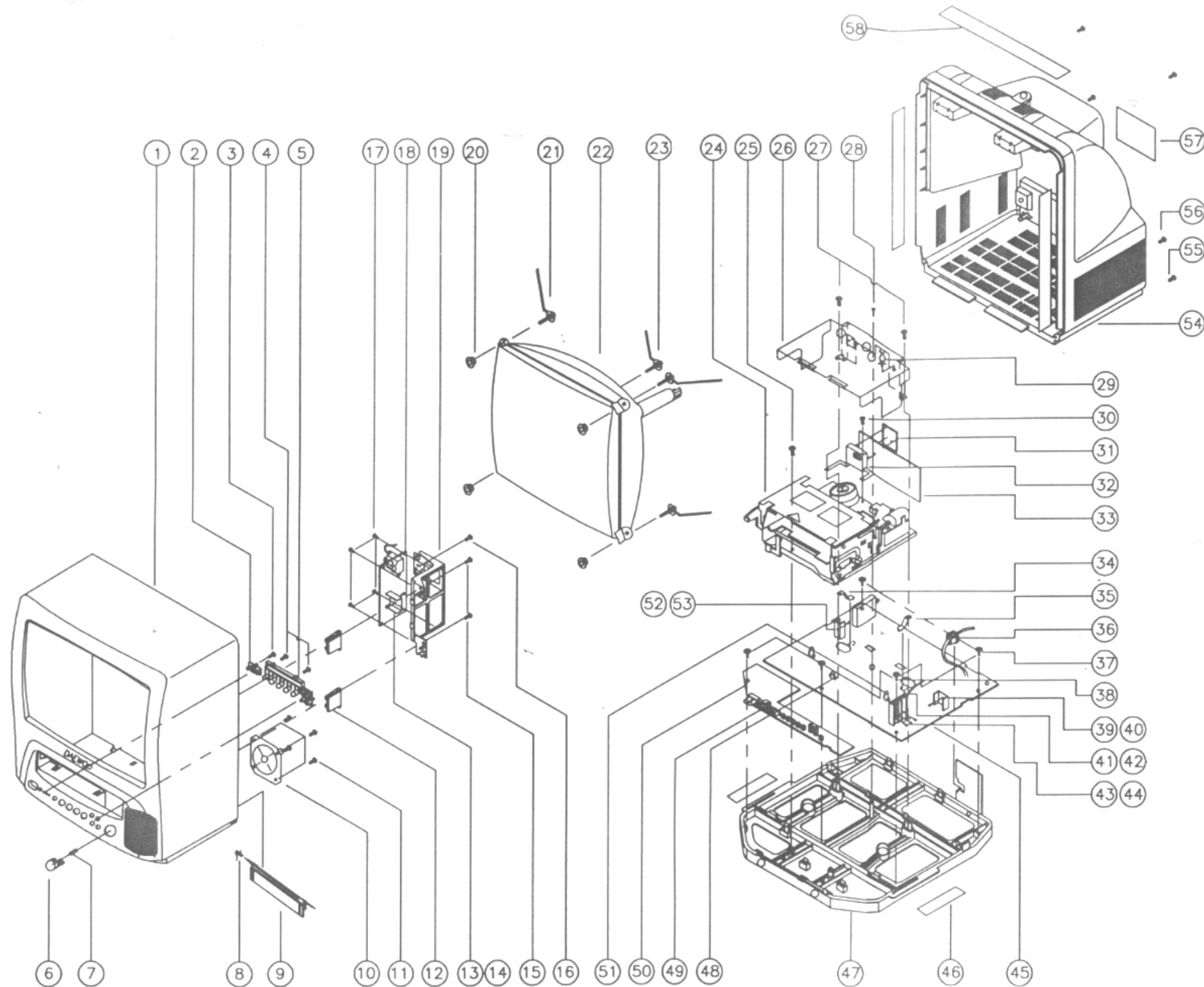


DRAWN	DESIGNED	CHECKED	APPROVED	CHASSIS	
				FILE NAME	
				ISSUED	
				REVISED	SEP. 3. 1997
DESIGNER	T	G	REV No.	SHEET	/
				SCHEM	No.

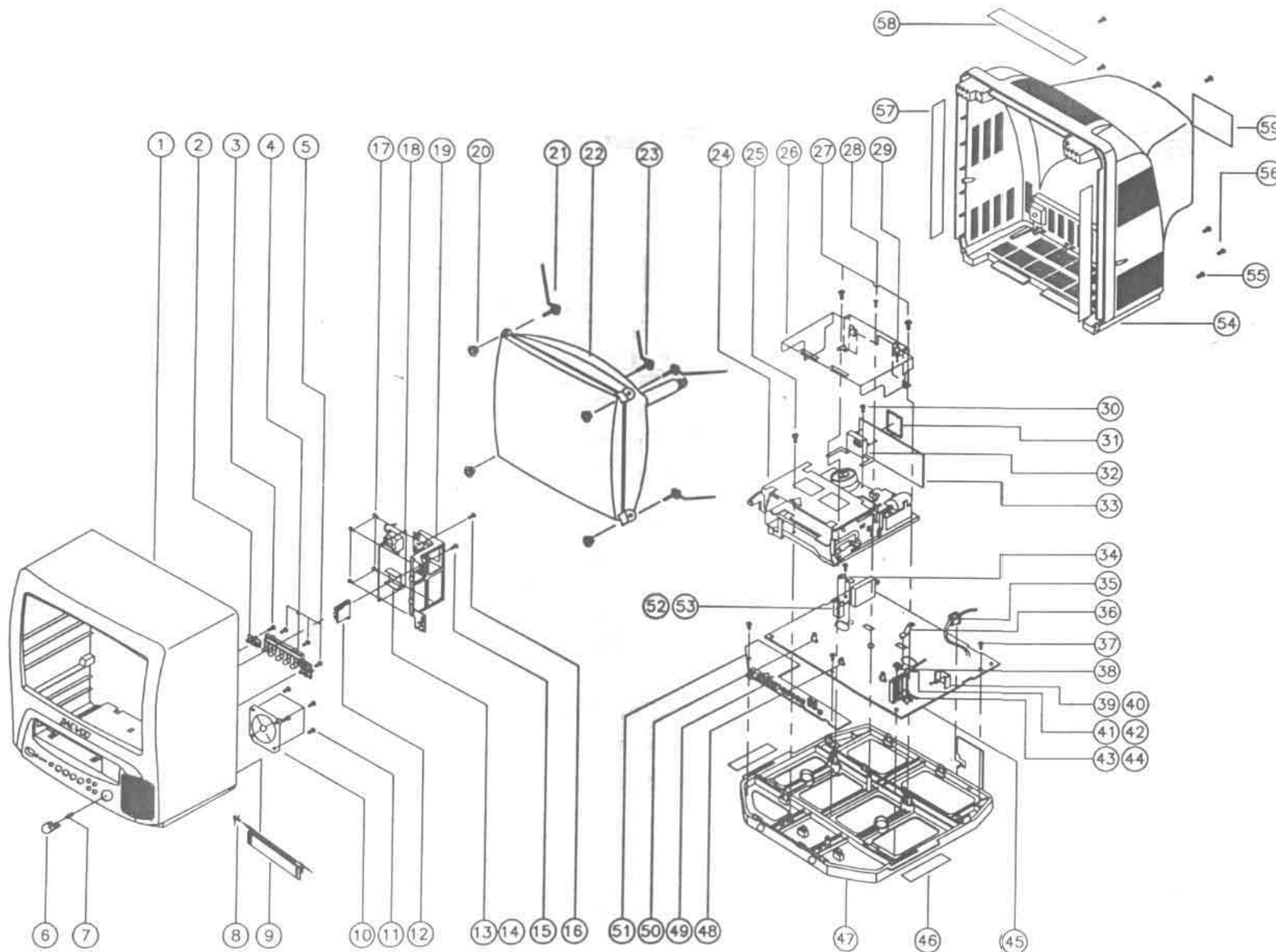
CN140 CHASSIS CONTROL PCB



EXPLODED VIEW
DVN-14F6N



58	4857817610	CLOTH BLACK	3	FELT T0.7 L=300	
57	4855415800	SPEC PLATE	1	150ART P/E FILM	
56	7122401611	SCREW TAPPING	1	T2S TRS 4X16 MFZN	47+54
55	7122401611	SCREW TAPPING	4	T2S TRS 4X16 MFZN	1+54
54	4852142700	COVER BACK	1	FR HIPS BK	
53	7174301011	SCREW TAPPITITE	1	TT2 RND 3X10 MFZN	
52	4857026900	HEAT SINK	1	AL EX	
51	97P2338200	HOLDER TR	2	ABS	
50		CONTROL PCB	1		
49	4853530800	HOLDER LED	1	FR HIPS BK	
48	97P2339600	HOLDER IR	1	ABS	
47	4853813100	FRAME MAIN PCB	1	FR HIPS BK	
46	4857817620	CLOTH BLACK	2	FELT T0.5 L=100	
45		MAIN PCB	1		
44	7174301011	SCREW TAPPITITE	3	TT2 RND 3X10 MFZN	
43	4857027301	HEAT SINK	1	AL 6063S-T5	
42	7128261011	SCREW TAPPING	1	T2S WAS 2.6X10 MFZN	39+41
41	4856810413	CLAMP WIRE	1	SBHG1-A T0.4 DG+PVC	
40	7174301011	SCREW TAPPITITE	1	TT2 RND 3X10 MFZN	
39	4857025403	HEAT SINK	1	AL050P-H24 T=2	
38	4856015601	SCREW FIX	1	SWRM+SCP	45+47
37	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN	45+47
36	97P2316600	HOLDER AC CORD	1	NYLON66 UL/CSA	
35	4853948400	BRKT EARTH	1	C5212P-1/2H T0.15	
34	4853948400	BRKT EARTH	1	C5212P-1/2H T0.15	
33		Y/C PCB	1		
32	4857238700	SHIELD CASE	1	SPTH-C T0.3	
31	4857238800	SHIELD PLATE	1	SPTH-C T0.3	
30	7128301011	SCREW TAPPING	1	T2S WAS 3X10 MFZN	24+32
29	4856814900	CLAMP WIRE	1	NYLON 66	
28	7124301211	SCREW TAPPING	1	T2S RND 3X12 MFZN	24+47
27	7122401611	SCREW TAPPING	2	T2S TRS 4X16 MFZN	26+47
26	4851923200	COVER TOP AS	1	DVN-20F6N	
25	7122401611	SCREW TAPPING	1	T2S TRS 4X16 MFZN	24+47
24	4851923800	DECK AS	1	SVR-K72000	
23	4856013302	SCREW CRT FIXING AS	2	L=190MM	
22		CRT(13")	1		
21	4856013300	SCREW CRT FIXING AS	2	L=70MM	
20	4856215404	WASHER RUBBER	4	CR T4.0	
19	4853813300	FRAME SUB PCB	1	FR HIPS BK	
18		PCB POWER	1	DVN-14F6N	
17	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN	18+19
16	7122401611	SCREW TAPPING	1	T2S TRS 4X16 MFZN	FBT+19
15	7122401611	SCREW TAPPING	2	T2S TRS 4X16 MFZN	12+19
14	7174301011	SCREW TAPPITITE	1	TT2 RND 3X10 MFZN	
13	4857027103	HEAT SINK	1	ETSD T1.0	
12	4853311601	RETAINER BACK	2	HIPS NC	
11	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN	1+10
10	4858309110	SPEAKER	1	3W 80HM A30C-560	
9	4852817701	DOOR F/L	1	ABS BK	
8	4856719800	SPRING	1	SWPB 0.35	
7	4856715600	SPRING	1	SWPA	
6	4854845801	BUTTON POWER	1	ABS BK	
5	7128301011	SCREW TAPPING	3	T2S WAS 3X10 MFZN	1+4
4	4854930001	BUTTON	1	ABS BK	
3	7128301011	SCREW TAPPING	1	T2S WAS 3X10 MFZN	1+2
2	4855526100	DECO SENSOR	1	PMMA	
1	4852057500	MASK FRONT	1	FR HIPS BK	



59	48554158D0	SPEC. PLATE	1	150ART P/E FILM
58	4857817611	CLOTH BLACK	1	FELT T0.7 L=200
57	4857817630	CLOTH BLACK	2	FELT T0.7 L=400
56	7122401611	SCREW TAPPING	1	T2S TRS 4X16 MFZN 47+54
55	7122401611	SCREW TAPPING	6	T2S TRS 4X16 MFZN 1+54
54	4852144200	COVER BACK	1	FR HIPS BK
53	7174301011	SCREW TAPPITITE	1	TT2 RND 3X10 MFZN
52	4857026900	HEAT SINK	1	AL EX
51		CONTROL PCB	1	
50	97P2338200	HOLDER TR	2	ABS
49	4853530800	HOLDER LED	1	FR HIPS BK
48	97P2339600	HOLDER IR	1	ABS
47	4853813100	FRAME MAIN PCB	1	FR HIPS BK
46	4857817620	CLOTH BLACK	2	FELT T0.5 L=100
45		MAIN PCB	1	
44	7174301011	SCREW TAPPITITE	3	TT2 RND 3X10 MFZN
43	4857027301	HEAT SINK	1	AL 6063S-T5
42	7128261011	SCREW TAPPING	1	T2S WAS 2.6X10 MFZN 41+43
41	4856810413	CLAMP WIRE	1	SBHG1-A T0.4 DG+PVC
40	7174301011	SCREW TAPPITITE	1	TT2 RND 3X10 MFZN
39	4857025403	HEAT SINK	1	AL050P-H24 T=2
38	4856015601	SCREW FIX	1	SWRM+SCP 45+47
37	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN 45+47
36	4853948400	BRKT EARTH	1	C5212P-1/2H T0.15
35	97P2316600	HOLDER AC CORD	1	NYLON66 UL/CSA
34	4853948400	BRKT EARTH	1	C5212P-1/2H T0.15
33		Y/C PCB	1	
32	4857238700	SHIELD CASE	1	SPTH-C T0.3
31	4857238800	SHIELD PLATE	1	SPTH-C T0.3
30	7128301011	SCREW TAPPING	1	T2S WAS 3X10 MFZN 24+32
29	4856814900	CLAMP WIRE	1	NYLON 66
28	7124301211	SCREW TAPPING	1	T2S RND 3X12 MFZN 24+47
27	7122401611	SCREW TAPPING	2	T2S TRS 4X16 MFZN 26+47
26	4851923200	COVER TOP AS	1	DVN-20F6N
25	7122401611	SCREW TAPPING	1	T2S TRS 4X16 MFZN 24+47
24	4851923800	DECK AS	1	SVR-K72000
23	4856013302	SCREW CRT FIXING AS	2	L=190MM
22		CRT(19")	1	
21	4856013300	SCREW CRT FIXING AS	2	L=70MM
20	4856215404	WASHER RUBBER	4	CR T4.0
19	4853813300	FRAME SUB PCB	1	FR HIPS BK
18		PCB POWER	1	DVN-14F6N
17	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN 18+19
16	7122401611	SCREW TAPPING	1	T2S TRS 4X16 MFZN FBT+19
15	7122401611	SCREW TAPPING	1	T2S TRS 4X16 MFZN 12+19
14	7174301011	SCREW TAPPITITE	1	TT2 RND 3X10 MFZN
13	4857027103	HEAT SINK	1	ETSD T1.0
12	4853311601	RETAINER BACK	1	HIPS NC
11	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN 1+10
10	4858309110	SPEAKER	1	3W 80HM A30C-560
9	4852817701	DOOR F/L	1	ABS BK
8	4856719800	SPRING	1	SWPB 0.35
7	4856715600	SPRING	1	SWPA
6	4854845801	BUTTON POWER	1	ABS BK
5	7128301011	SCREW TAPPING	3	T2S WAS 3X10 MFZN 1+4
4	4854930001	BUTTON	1	ABS BK
3	7128301011	SCREW TAPPING	1	T2S WAS 3X10 MFZN 1+2
2	4855526100	DECO SENSOR	1	PMMA
1	4852057600	MASK FRONT	1	FR HIPS BK

ENGINEER NOTE



Engineer's Note template with 20 horizontal dashed lines for writing.

DAEWOO

DAEWOO ELECTRONICS CO., LTD.
686, AHYEON-DONG, MAPO-GU,
SEOUL, KOREA.
C.P.O. BOX 8003 SEOUL KOREA